Report 11155 May 1998



Integrated Advanced Microwave Sounding Unit-A (AMSU-A)

Performance Verification Report
EOS AMSU-A1 and AMSU-A2 Receiver Assemblies

Contract No. NAS 5-32314 CDRL 208

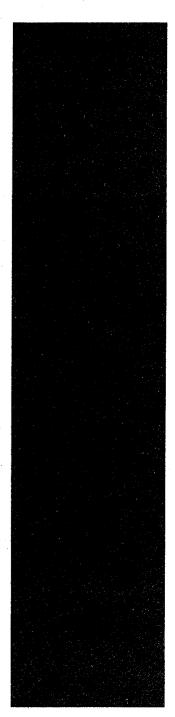
Submitted to:

National Aeronautics and Space Administration Goddard Space Flight Center Greenbelt, Maryland 20771

Submitted by:

Aerojet 1100 West Hollyvale Street Azusa, California 91702





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TABLE OF CONTENTS

SECTION		PAGE
1.0	INTRODUCTION	1
2.0	REASON FOR TEST	1
3.0	ACCEPTANCE TEST	1
4.0	ORGANIZATION OF TEST DATA	5
5.0	SUMMARY AND RECOMMENDATIONS	5
6.0	TEST DATA	6

AMSU-A RECEIVER VERIFICATION TEST REPORT

LEVEL OF ASSEMBLY:

SUBASSEMBLY

TEST ITEM:

AMSU-A1 RECEIVER ASSEMBLY

P/N: 1356429-1, S/N: F01 P/N: 1356409-1, S/N: F01

AMSU-A2 RECEIVER ASSEMBLY

P/N: 1356441-1, S/N: F01

TYPE OF HARDWARE:

EOS FLIGHT MODEL (FM)

TYPE OF TEST:

FUNCTIONAL PERFORMANCE

VERIFICATION TEST PROCEDURE:

AE-26002/6A

TEST FACILITY LOCATION:

AESP

AZUSA, CALIFORNIA

SIGNATURE:

TEST ENGINEER: () DATE: 5/09/198

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:			

1.0 INTRODUCTION

The AMSU-A receiver subsystem comprises two separated receiver assemblies; AMSU-A1 and AMSU-A2 (P/N 1356441-1). The AMSU-A1-1 receiver contains 13 channels and the AMSU-A receiver 2 channels. The AMSU-A1 receiver assembly is further divided into two parts; AMSU-A1-1 (P/N 1356429-1) and AMSU-A1-2 (P/N 1356409-1), which contain 9 and 4 channels, respectively. The receiver assemblies are highlighted in Figures 1 and 2, which illustrate the functional block diagrams of the AMSU-A1 and AMSU-A2 systems.

The AMSU-A receiver subsystem stands in between the antenna and signal processing subsystems of the AMSU-A instrument and comprises the RF and IF components from isolators to attenuators as shown in Figures 1 and 2. It receives the RF signals from the antenna subsystem, down-converts the RF signals to IF signals, amplifies and defines the IF signals to proper power level and frequency bandwidth as specified for each channel, and inputs the IF signals to the signal processing subsystem.

This test report presents the test data of the EOS AMSU-A Flight Model No. 1 (FM-1) receiver subsystem. The tests are performed per the Acceptance Test Procedure for the AMSU-A Receiver Subsystem, AE-26002/6A. The functional performance tests are conducted either at the component or subsystem level. While the component-level tests are performed over the entire operating temperature range predicted by thermal analysis, the subsystem-level tests are conducted at ambient temperature only.

2.0 REASON FOR TEST

The Acceptance Test Procedure for the AMSU-A Receiver Subsystem, AE-26002/6A, is prepared to describe in detail the configuration of the test setups and how the tests are to be conducted to verify that the receiver subsystem meets the specifications as required either in the AMSU-A Instrument Performance and Operation Specification, S-480-80, or in AMSU-A Receiver Subsystem Specification, AE-26608, derived by the Aerojet System Engineering. Test results that verify the conformance to the specifications demonstrates the acceptability of that particular receiver subsystem.

3.0 ACCEPTANCE TEST

The acceptance tests for the AMSU-A receiver subsystem are performed either at the component or subsystem level. The component-level tests are conducted per the Acceptance Test Procedure of each component at supplier's facilities. The subsystem-level tests are conducted per the Acceptance Test Procedure, AE-26002/6A at Aerojet Azusa facility.

Report 11155 May 1998

The component-level tests include the center frequency, center frequency stability, bandpass characteristics, gain stability, and gain compression. Although the bandpass characteristics can change slightly in subsystem level, these performance are solely dependent on the component characteristics. The subsystem-level tests include the center frequency, IF output power, bandpass characteristics, noise figure, noise power stability, and the tunable short test.

The subsystem-level tests are performed on three receivers; AMSU-A1-1, AMSU-A1-2, and AMSU-A2. However, since the multiplexers of the AMSU-A1 system are inseparably integrated to the receivers, the acceptance tests are conducted with the feedhorns directly connected to respective multiplexers. Likewise, the AMSU-A2 receiver is tested with the feedhorn directly connected to the diplexer that precedes the receiver subsystem. These tests are performed at room ambient temperature only.

Wire connections between the D-sub connectors and platinum resistance temperature (PRT) sensors and thermistors, D-sub connector and PLO lock detection terminals, and D-sub connector and survival heaters through the thermal switches are verified by measuring either the resistance between the respective two pins or the voltage across the respective two pins. A failure was encountered during the wire connection tests for the A1-1 receiver. This failure was traced to wrong connection of wires between the D-sub connectors and a thermister (TB53) and corrected by reversing the wire connections. This issue is addressed in TAR No. 003182.

The functional performance tests for the EOS AMSU-A receiver subsystem began with the AMSU-A2 receiver. A higher noise figure (5.29dB) was measured for the channel 1 against the specification of 4.55dB. The cause of this out-of-specification condition was traced to the mixer/IF amplifier (P/N: 1331662-11, S/N: 7A01), and the unit was replaced by another (S/N: 7A11) resulting in a noise figure of 3.81 dB. This anomaly is addressed in F/AR No. 058.

The AMSU-A1-1 receiver tests were performed with the No. 2 phased-locked oscillator (PLO) only as the waveguide attenuator for the No. 1 PLO was not ready at the time of test. Another anomaly was encountered during these tests. The output level for the channels 6 and 7 was higher by 7-8 dB at the lower end of the passband and flattened out at 50-60 MHz. This anomaly resulted in higher noise figures than the predicted; 5.96dB for the channel 6 (pushing it to an out-of specification condition) and 5.09dB for the channel 7 against the specification of 5.2dB each when measured by a power meter. The cause of this anomaly was traced to the dielectric resonator oscillators (DROs) (P/N 1336610-6, S/N 85015 for channel 6 and P/N 1336610-7, S/N 85022 for channel 7). This issue is addressed in F/AR No. 070. The channel 6 DRO was replaced by another unit (S/N 85024) resulting in a noise figure of 4.06dB. The channel 7 DRO was not replaced as no other unit was available at the time of test while the measured noise figure was still within the specification of 5.2dB. During the preliminary system-level tests the power level of the channel 7 DRO was lowered reducing the hump over the lower portion

of the passband. A plotted bandpass characteristic at the reduced LO power level is included in the test report.

The functional performance tests for the A1-1 receiver were continued with the replacement channel 6 DRO and the No. 1 PLO. However, the test procedure was modified for this A1-1 receiver; i) The noise figures were measured with 3 samples instead of 10 samples. ii) The bandpass characteristics for the channels 9 through 14 were not measured with the PLO No.1. iii) Noise stability tests were not conducted for channels 9 through 14 with the PLO No. 1. iv) Tunable short tests were not performed for all channels. (The tunable short test will instead be conducted on the METSAT AMSU-A receiver subsystem.)

The AMSU-A A1-2 receiver was likewise tested according to the modified procedure. The noise figures were measured with 3 samples. Noise stability and tunable short tests were omitted. No anomaly was observed for A1-2 receiver tests.

4.0 ORGANIZATION OF TEST DATA

The test data are organized in the following formats. The test data obtained at the component level are first summarized for each category for all applicable receiver channels. The bandpass characteristics of the filters are summarized only for the data measured at mid-temperature. Supporting component test data over the operating temperature range then follows the summaries.

The subsystem-level test data are organized for each receiver (A1-1, A1-2, and A2), but not in the order of tests. Test data recorded in the test sheet as prepared in the Acceptance Test Procedure and other test plots are included in this test report.

5.0 SUMMARY AND RECOMMENDATIONS

The EOS AMSU-A FM-1 receiver subsystem successfully passed all performance requirements and is delivered to the System Engineering for system integration and test. The test data, in most cases, indicated adequate margin for key performance specifications.

Some tests for the A1 receivers were either simplified or omitted. The noise stability test was conducted only for the channels 9 through 14 of the AMSU-A1-1 receiver with the PLO No.1. The noise stability test was conducted for all mixer/amplifiers at the component level. Tunable short test was not performed and will instead be conducted on the METSAT receivers.

We have encountered two out-of-specification conditions during the functional performance tests for the EOS AMSU-A receiver subsystem. Higher than predicted

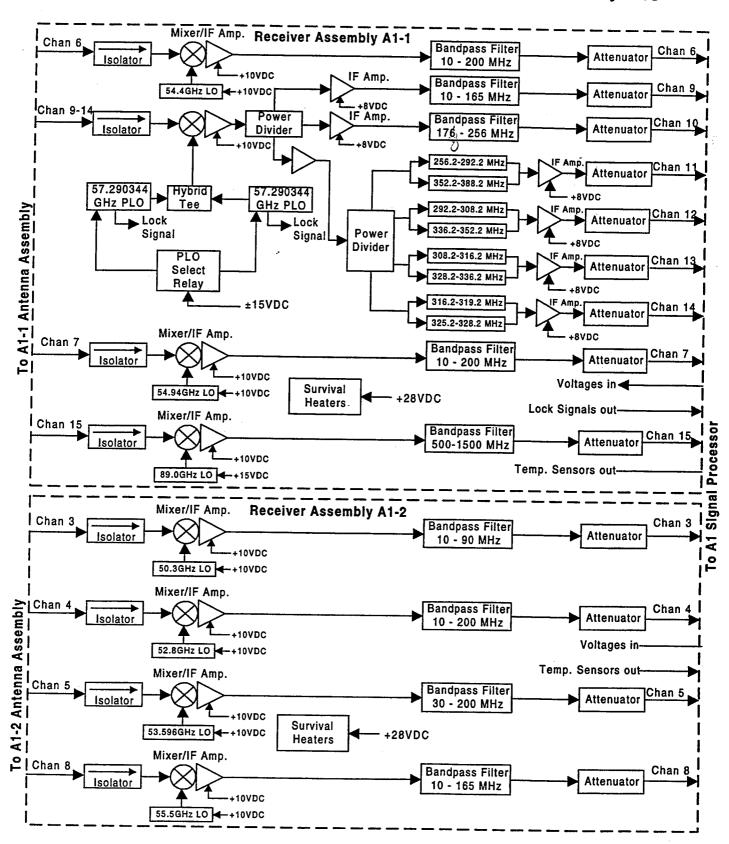


Figure 1. AMSU-A1 Receiver Functional Block Diagram

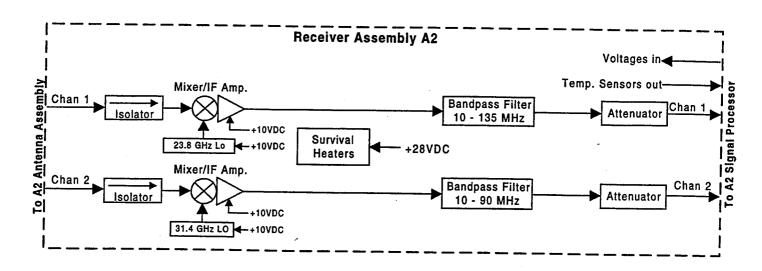


Figure 2. AMSU-A2 Receiver Functional Block Diagram

noise figures were measured for channel 1 of the A2 receiver and channel 6 of the A1-1 receiver (F/AR Nos. 058 and 070). We suspect the channel 1 noise figure anomaly to be the impedance matching at the RF port of the mixer. The channel 6 noise figure anomaly seems to be strongly related with the significant output level change over the passband. Similar phenomenon was observed on the channel 7 which indicated higher noise figure than the predicted and yet met the specification. We conveyed this concern to the System Engineering and requested to pay special attention to it during the system tests.

Lack of hardware has thus far limited us from conducting sufficient trouble-shooting and subsequent root-cause analyses on above-mentioned anomalies. The cause of those anomalies are not clear yet and their dispositions have not been completed at this time. We recommend that these issues are systematically investigated and a firm procedure is established to prevent similar anomalies from occurring on future receiver subsystems.

6.0 TEST DATA

In the following, the component and subsystem-level test data are organized as delineated in Paragraph 4.0.

COMPONENT-LEVEL TEST DATA

CENTER FREQUENCY AND FREQUENCY STABILITY

FOR

LOCAL OSCILLATORS (LOs) (DROs, PLOs, & GDO)

CENTER FREQUENCY OF LOs

Channel No.	1	2	3	4	5	6	7	8	9-14 *	15
Specification (GHz) Setting Accuracy (+/-GHz)	23.8	31.4	50.3 0.002	52.8 0.001	53.596 0.001	54.4 0.001	54.94 0.001	55.5 0.002	57.290344 0.000086	89.0
Measured (GHz)	23.80004	31.40028	50.30038	52.80022	53.59677	54.40008	54.93996	55.50077	57.290340 57.290329	88.987

^{*} Measured for PLO No. 1 and No. 2.

FREQUENCY STABILITY OF LOs

Channel No.	1	2	3	4	5	6	7	8	9-14 *	15
Short-Term Specification (+/-MHz)	8	8	8	3	3	3	3	6	0.086	80
Setting Accuracy (+/-MHz)	2	2	2	1	1	1	1	2		30
W/ Temp. & Voltage (+/-MHz)	6	6	6	2	2	2	2	6		50
Measured (MHz) Total	+3.45, -0.99	+1.73,	+3.17, -2.74	+2.79 -1.97	+1.56, -1.45	+0.62,	+1.66, -0.71	+1.38, -1.75	0.039	+5., -29.
									0.025	
<u>Long-Term</u> Specification (+/-MHz)	2	2	2	2	2	2	2	2	0.114	50
By Design or Analysis ** (+/-MHz)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.115	76

Note: Additional +/-0.1MHz frequency stability reserved for safety margin for channels 11-14.

^{*} Measured for PLO No. 1 and No. 2.** Based on accelerated life-test data for DROs.

Channel 1 LO

DRO (P/N: 1336610-1, S/N: 544321)

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TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

II.	IITIAL DAT	A SET FINAL D	ATA SET	<u>/</u>	
LITTON TYPE LS K 960	04 CF		AESI	D 1336610- <u> </u>	
SERIAL NUMBER: 544	321	QUAL TEST	ACC	EPT TEST	
Basic Electrical Test; Ref. Test	Para. 5.2.2				
SPECIFICATION		MEASUREMENT AT I	Cnom ±1°C	LIMIT	
Measurement at Vop=10 VDC					
Temperature		18°C		Table IIIB	
Input Voltage		10.0 VDC		$10.0 \pm 0.2 \text{ VDC}$	
Input Current		79 mA		Table IIIB	
Input Power, P _{diss}		0.79 W DC		P _{diss} max	
•		23.800 035 GHz		Table IIIB	
Frequency, f _{Tnom}		13.8 dBm		12 to 17 dBm	
RF Output Power, P _{Tnom}				12 to 17 dBm	
Frequency Setting Accuracy,		<u>+.035</u> MHz		•	
$\Delta f_S (= f_{Tnom} - F_o)$			•	•	
Frequency and RF Output Power			5.2.3	· .	
Measurement at 9.5 VDC or at	VD				
Temperature		<u>(</u> 8°C		Table IIIB	1 / 1 · ·
Input Voltage		<i>[O</i> VDC		9.5 VDC or Para. 5.2.3.2	1
Input Current		78 mA		Table IIIB	
Frequency, f _{meas}		23.800047 GHz		Table IIIB	
RF Output Power, P _{meas}		13.8 dBm		12 to 17 dBm	
To output 10 wor, 1 meas					
Measurement at 10.5 VDC or a	t V	DC		•	
Temperature				Table IIIB	
Input Voltage		VDC VDC		10.5 VDC or Para. 5.2.3.3	
Input Current				Table IIIB	
Frequency, f _{meas}		23.800043GHz		Table IIIB	
		(3.8 dBm		12 to 17 dBm	
RF Output Power, P _{meas}		(3.8 dbiii		12 to 17 doin	
Calculate Frequency Variation,	$\Delta f_V = f_{\text{meas}} - f$	Тпот			
Δf _V at 9.5 VDC or at	VDO	7= +.012	MHz		
Δf_V at 10.5 VDC or at	•	·	MHz		
Calculate RF Output Power Va				5	
•				•	
ΔP_V at 9.5 VDC or at			_dB		
ΔP _V at 10.5 VDC or at	_ VD0	C =	_dB		
•	А	ccept Reject			
		/ 0/==			11
	21	Date 10/28/97	•		V
Litton QA	477	Date <u>OCT 3 1 1997</u>			
	((N)		<u> </u>		
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TEST DATA SHEET 7.3

_	TA SET			/
LITTON TYPE LS <u>K 9604 C</u> SERIAL NUMBER: <u>54432</u>	F QUAL TE	ST	AESD ACCE	1336610- <u> </u> PT TEST <u> </u>
Temperature Testing at T=10°C, R	ef. Test Para. 5.2.5.	1		
SPECIFICATION	MEASUREMEN'	T AT T=10° ±1°	<u>C</u>	LIMIT
Measurement at Vop=10 VDC Temperature	9.1	°C		10° ± 1°C
Input Voltage	10	VDC		$10.0 \pm 0.2 \text{ VDC}$
Input Current	79	mA		Table IIIB
Input Power, P _{diss}	0.79	W DC		Pdiss max
Frequency, $f_{10^{\circ}C}$		982 GHz		Table IIIB
RF Output Power, P _{10°C}	13,			12 to 17 dBm
Frequency and RF Output Power V Measurement at 9.5 VDC or at Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas} Measurement at 10.5 VDC or at Temperature Input Voltage Input Current Frequency, f _{meas}	VDC	°C VDC mA 287 GHz 7 dBm °C VDC mA 280 GHz	a 5.2.5.1	Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB Table IIIB
RF Output Power, P_{meas} Calculate Frequency Variation, Δf_V			Y _	12 to 17 dBm
Δf_V at 9.5 VDC or at	VDC =	1.005 MF		
Δf_V at 10.5 VDC or at Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Tnom})	VDC =	+1,247 MF		
Calculate RF Output Power Variati	on, $\Delta P_V = P_{meas} - P_{10}$		12	# - 2
ΔP_V at 9.5 VDC or at	VDC =	<u> </u>		
ΔP_V at 10.5 VDC or at	VDC =	OdB		
ΔP_{T} at 10.0 VDC (= $P_{10^{\circ}C}$ - P_{Tnom})	=	dB		
Test Performed by Litton Q.A.	Da	Accept	97	ect
(3)				
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TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS

	FINAL DATA	
LITTON TYPE LS K 9604 CF SERIAL NUMBER: 544321	QUAL TEST	AESD 1336610 ACCEPT TEST
Temperature Extreme Testing at Tmin, Ref.	Test Para. 5.2.5.2	en e
SPECIFICATION	MEASUREMENT AT Tmin	±1°C LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}	°C VDC mA W DC 23.863173 GHz dBm	Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or atVI Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	/DC °C 	Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - \Delta f_V$ at 9.5 VDC or at VDC = Δf_V at 10.5 VDC or at VDC = Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom})	+.007	MHz
Calculate RF Output Power Variation, $\Delta P_V = \Delta P_V$ at 9.5 VDC or at VDC = ΔP_V at 10.5 VDC or at VDC = ΔP_T at 10.0 VDC (= P_{Tmin} - P_{Tnom})		_dB _dB _dB
Test Performed by Litton Q.A. Accep	Date 10/28/97 Date 0CT 3 1 1997	_ _ _
CODE IDENT NO. 56348 A	NUMBER RE 1300823 B	l l

TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS

•	INITIAL DATA	SET	FINAL DA	TA SET _	<u> </u>	
LITTON TYPE LS __\ SERIAL NUMBER: _		 QUAL TES	Т		0 1336610- <u>1</u> EPT TEST V	
Temperature Testing a		-				
SPECIFICATION		MEASURE	MENT AT]	<u>Γ=30° ±1°C</u>	LIMIT	
Measurement at Vop= Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{30°C} RF Output Power, P _{30°}		31 10 79 0.79 23.7971	°C VDC mA W DC 3] GHz dBm		30° ± 1°C 10.0 ± 0.2 VD0 Table IIIB Pdiss max Table IIIB 12 to 17 dBm	2
Frequency and RF Out Measurement at 9.5 VI Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{mes}	DC or at		°C VDC mA	ara 5.2.5.3	Table IIIB 9.5 VDC or Par Table IIIB Table IIIB 12 to 17 dBm	a. 5.2.3.2
Measurement at 10.5 V Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{me}		_VDC 3\ 10.5 79 23.79713 13.7	°C VDC mA > GHz dBm		Table IIIB 10.5 VDC or Pa Table IIIB Table IIIB 12 to 17 dBm	ara. 5.2.3.3
Calculate Frequency V Δf_V at 9.5 VDC or at Δf_V at 10.5 VDC or at Δf_T at 10.0 VDC (= f_{30})	VD	C =	.006 M .006 M 2.898 M	(Hz		
Calculate RF Output F ΔP_V at 9.5 VDC or at ΔP_V at 10.5 VDC or at ΔP_T at 10.0 VDC (=P ₃	VD	C =	<u>0</u> d	B B B		*
Test Performed by Litton Q.A.	DH (N) SE	Date	Accept		t	
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TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS WITIAL DATA SET FINAL DATA SET

	T FINAL DATA	
LITTON TYPE LS K 9604 CF		AESD 1336610- \
SERIAL NUMBER: 544321	QUAL TEST	ACCEPT TEST
Temperature Extreme Testing at Tmax, Ref	. Test Para. 5.2.5.4	
SPECIFICATION	MEASUREMENT AT Tma	x ±1°C LIMIT
Measurement at Vop=10 VDC	0	
Temperature	<u>39.9</u> °C	Table IIIB
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	78mA	Table IIIB
Input Power, P _{diss}	6.78 W DC	Pdiss max
Frequency, f_{Tmax}	23.796162GHz	Table IIIB
RF Output Power, P _{Tmax}	13.7 dBm	12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at V		5.2.5.4
Temperature	<u>39.9</u> ℃	Table IIIB
Input Voltage	<u>9.5</u> VDC	9.5 VDC or Para 5.2.3.2
Input Current	mA	Table IIIB
Frequency, f _{meas}	23.796165GHz	Table IIIB
RF Output Power, P _{meas}	dBm	12 to 17 dBm
Measurement at 10.5 VDC or at	VDC	
Temperature	~39.9 °C	Table IIIB
Input Voltage	(0.5 VDC	10.5 VDC or Para 5.2.3.3
Input Current	78 mA	Table IIIB
Frequency, f _{meas}	23.796159GHz	Table IIIB
RF Output Power, P _{meas}	/3.7 dBm	12 to 17 dBm
•		•
Calculate Frequency Variation, $\Delta f_V = f_{meas}$		
Δf_{V} at 9.5 VDC or at VDC =		
Δf_{V} at 10.5 VDC or at VDC =		
Δf_T at 10.0V (= f_{Tmax} - f_{Tnom})	= -3.873 MHz	
Calculate RF Output Power Variation, ΔP _V	$= P_{\text{meas}} - P_{\text{Tnom}}$:	٠
ΔP_{V} at 9.5 VDC or at VDC	= <u>O</u> dB	
ΔP_{V} at 10.5 VDC or at VDC	= <u> </u>	
	= dB	
Acce	ept V Reject	
Test Performed by	Date 10/28/9	- ! フ
Litton Q.A.	Date 10 - 31 - 52	
Emon Q.71.		
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TEST DATA SHEET 7 23B

	FUNC	TIONAL PERFORMAN		
IΝ	ITIAL DATA S	SET FINAL	DATA SET _	<u> </u>
LITTON TYPE LS K	ALNIL CE			AESD 1336610- 1
SERIAL NUMBER:		QUAL TEST		ACCEPT TEST V
Frequency Pulling and Lo	ad VSWR 2.5:1	l max. all phases. Ref T	est Para. 5.9	
TEST DESCRIPTION			LIMI	T <u>S</u>
Output Open and Short. R	ef. Test Para. 5	.9.5		·
Temperature	23	°C	24°C	± 5°C
Frequency:	23.7993	GHz	Table	IIIB
RF Output Power:	13.8	dBm	12 to	17 dBm
Input Voltage	10	VDC	10 ± 6	0.2 VDC
Input Current:	78	mA	Table	IIIB .
Results:		Acceptable	No D	amage or Degradation
$\Delta f_{acc} = \Delta f_{S}$ (Use worst-cate Maximum $\Delta f_{acc} =$ Calculate maximum Shor $\Delta f_{V+T} = \Delta f_{V} + \Delta f_{T}$ (Use worst-cate Maximum $\Delta f_{V+T} = \Delta f_{V} + \Delta f_{T}$)	t-term Frequence forst-case Δf_V are	MHz (Positive) MHz (Negative) y Stability (both positive and Δf _T from 7.2 thru 7.6) MHz (Positive)	Table Table and negative)	IIIB IIIB
Calculate maximum over $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T}$ (Use	all RF Output Po	- · · · · · · · · · · · · · · · · · · ·	_	•
Maximum $\Delta P_{OV} =$	+.2 2	dB (Positive) dB (Negative)	1.0 dE -1.0 d	
	Ac	cept Reject		
Test Performed by	OH	Date	10-29-	-97
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Channel 2 LO

DRO (P/N: 1336610-2, S/N: 85010)

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TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET _____ FINAL DATA SET _____

INITIAL DATE		
LITTON TYPE LS A 9635 CF	- ·	AESD 1336610≥
SERIAL NUMBER: 85010	QUAL TEST	ACCEPT TEST
Basic Electrical Test: Ref. Test Para. 5.2.2	·	
SPECIFICATION	MEASUREMENT AT Tnom ±	1°C LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P_{diss} Frequency, f_{Tnom} RF Output Power, P_{fnom} Frequency Setting Accuracy, $\Delta f_S (= f_{Tnom} - F_o)$	17.7 °C 10.0 VDC 116.4 mA 1.16.4 W DC 31.40528GHz 13.75 dBm +.284 MHz	Table IIIB $10.0 \pm 0.2 \text{ VDC}$ Table IIIB P_{diss} max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation William Measurement at 9.5 VDC or at VDC Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or atVD Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	18.1 °C 10.5 VDC 116.4 mA 31.4∞ 268GHz 13.75 dBm	Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{\text{meas}} - f_T$	nom	
Δf_V at 9.5 VDC or at VDC Δf_V at 10.5 VDC or at VDC		
Calculate RF Output Power Variation, $\Delta P_V = \frac{1}{2}$	P _{meas} - P _{Tnom} ,	
ΔP_V at 9.5 VDC or at VDC ΔP_V at 10.5 VDC or at VDC	= <u>/</u> dB	
Ac	cept Reject	
Test Performed by Litton QA	Date 11-18-47 NOV 2 5 1997	
CODE IDENT NO SIZE	NUMBER RI	EV SHEET 38 OF 68

1	CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 38 OF 68
ĺ	56348	A	1300823	В3	
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Solid State

TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS

INITIAL DAT	A SET FINAL DATA	SET
LITTON TYPE LS A 9635 CT	<u>. </u>	AESD 1336610 Z
SERIAL NUMBER: 85010		ACCEPT TEST
Temperature Testing at T=10°C. Re	f. Test Para. 5.2.5.1	
SPECIFICATION	MEASUREMENT AT T=10° ±1°C	LIMIT
Measurement at Vop=10 VDC		
Temperature	°C <u>ما او ا</u>	$10^{\circ} \pm 1^{\circ}C$
Input Voltage		$10.0 \pm 0.2 \text{ VDC}$
Input Current	16.3 mA	Table IIIB
Input Power, P _{diss}	1.163 W DC	Pdiss max
Frequency, f _{10°C}	31,400 910 GHz	Table IIIB
RF Output Power, P _{10°C}	<u>13.8</u> dBm	12 to 17 dBm
Frequency and RF Output Power Var Measurement at 9.5 VDC or at		
Temperature	10.6°C	Table IIIB
Input Voltage	<u>9.5</u> VDC	9.5 VDC or Para. 5.2.3.2
Input Current		Table IIIB
Frequency, f _{meas}	31.400 900 GHz	Table IIIB
RF Output Power, P _{meas}	/3. <i>&</i> dBm	12 to 17 dBm
Measurement at 10.5 VDC or at	VDC '	
Temperature		Table IIIB
Input Voltage	10.5 VDC	10.5 VDC or Para. 5.2.3.3
Input Current	//6.3 mA	Table IIIB
Frequency, f _{meas}	31.400920GHz	Table IIIB
RF Output Power, P _{meas}	/3.8 dBm	12 to 17 dBm
RF Output Fower, I meas		
Calculate Frequency Variation, Δf_V =	, , , , , , , , , , , , , , , , , , , ,	
Δf_V at 9.5 VDC or at	VDC = MHz	
Δf_V at 10.5 VDC or at	VDC =	
Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Tnom})	= <u>+.626</u> MHz	
Calculate RF Output Power Variation	$\Delta P_{V} = P_{meas} - P_{10^{\circ}C}$:	
ΔP _V at 9.5 VDC or at	VDC =	
ΔP_V at 10.5 VDC or at	VDC =	
ΔP_T at 10.0 VDC (= $P_{10^{\circ}C}$ - P_{Tnom})	= +, os dB	
11 at 10.0 \ 20 \ (1 \ 10.0 \ 1 \ 1000)		n .
	Accept	Reject
Test Performed by	Date _//-18-9-7	<u>'</u>
Litton Q.A.	Date NOV 25 198	<u> </u>
CODE IDENT NO. SIZE	NUMBER R	EV SHEET 39 OF 68
CODE IDENT NO. SIZE		33

TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS

	FINAL DAT	
LITTON TYPE LS A 9635 CF SERIAL NUMBER: 85010	QUAL TEST	AESD 1336610- 2 ACCEPT TEST
Temperature Extreme Testing at Tmin. Ref.	Test Para. 5.2.5.2	
SPECIFICATION	MEASUREMENT AT Tr	$min \pm 1^{\circ}C \qquad LIMIT$
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power. P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}	°C VDC 	Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or atVI Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or atV Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	/DC °C °C 	Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - \Delta f_V$ at 9.5 VDC or at VDC = Δf_V at 10.5 VDC or at VDC = Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom})		MHz MHz 6_ MHz
Calculate RF Output Power Variation, $\Delta P_V = \Delta P_V$ at 9.5 VDC or at VDC = ΔP_V at 10.5 VDC or at VDC = ΔP_T at 10.0 VDC (= P_{Tmin} - P_{Tnom})	# # # # # # # # # # # # # # # # # # #	dB dB dB
Test Performed by Litton Q.A. Accep	Date	997
CODE IDENT NO. 56348 A LITTON / SOLID STATE DIVIS	NUMBER 1300823	REV SHEET 40 OF 68 B3 SANTA CLARA, CA 95054

Solid State

TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS NITIAL DATA SET FINAL DATA SET

INITIAL DATA SE	,I FINAL DATA	SEI
LITTON TYPE LS A 9635 CF SERIAL NUMBER: 85010	QUAL TEST	AESD 1336610- Z_ ACCEPT TEST
Temperature Testing at T=30°C, Ref. Test F	Para. 5.2.5.3	
SPECIFICATION	MEASUREMENT AT T=30	°±1°C LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power. P _{diss} Frequency, f _{30°C} RF Output Power, P _{30°C}	30.4 °C 10.0 VDC 117.0 mA W DC 398 8 3.0 GHz 13.7 dBm	$30^{\circ} \pm 1^{\circ}\text{C}$ $10.0 \pm 0.2 \text{ VDC}$ Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at V Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	With Voltage, Ref. Test Para 5 DC30.4 °C9.5 VDC WA	Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or atV Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	VDC 30.4 °C 10.5 VDC 117.0 mA 31.398 & GHz 13.7 dBm	Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - \Delta f_V$ at 9.5 VDC or at VDC = Δf_V at 10.5 VDC or at VDC = Δf_T at 10.0 VDC (= $f_{30^{\circ}\text{C}}$ - f_{Tnom})	= <u>+.0/</u> MHz	
Calculate RF Output Power Variation, ΔP_V ΔP_V at 9.5 VDC or at VDC = ΔP_V at 10.5 VDC or at VDC = ΔP_T at 10.0 VDC (= $P_{30^{\circ}C}$ - P_{Tnom})	$=$ ϕ dB	
Test Performed by Litton Q.A.	Accept	Reject

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 41 OF 68
56348	A	1300823	B3	

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TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS WITH DATA SET FINAL DATA SET

INITIAL DATA SE	T FINAL D	ATA SET	\checkmark
LITTON TYPE LS A 9635 CF SERIAL NUMBER: 85010	QUAL TEST		1336610- <u>~</u> PPT TEST
Temperature Extreme Testing at Tmax. Ref.	Test Para. 5.2.5.4		
SPECIFICATION	MEASUREMENT AT	Tmax ±1°C	LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmax} RF Output Power, P _{Tmax}	41 °C 10.0 VDC 117.0 mA 1.17 W DC 31.3912486GHz 13.7 dBm		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at V Temperature Input Voltage Input Current Frequency, f_{meas} RF Output Power, P_{meas}			Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or atV Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	VDC °C VDC 		Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - \Delta f_V$ at 9.5 VDC or at VDC = Δf_V at 10.5 VDC or at VDC = Δf_T at 10.0V (= f_{Tmax} - f_{Tnom})	= <u>d</u> N = <u>-,004</u> N	ИНz ИНz МНz	
Calculate RF Output Power Variation, $\Delta P_V = \Delta P_V$ at 9.5 VDC or at VDC = ΔP_V at 10.5 VDC or at VDC = ΔP_T at 10.0 VDC (= P_{Tmax} - P_{Tnom})	= <u>\$</u> 6 = <u>\$</u> 6	B B B	
Test Performed by Litton Q.A.	Date <u>//- / & -</u> Date NOV 2 5	1997	z
CODE IDENT NO. SIZE 56348 A	NUMBER 1300823	В3	SHEET 42 OF 68
LITTON / SOLID STATE DIVIS	SION / 3251 OLCOTT ST	r / Santa C	LARA, CA 95054

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Solid State

TEST DATA SHEET 7.23B FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET _____ FINAL DATA SET ____ LITTON TYPE LS A 9635 CF SERIAL NUMBER: 8500 QUAL TEST ACCEPT TEST ACCEPT TEST Frequency Pulling and Load VSWR 2.5:1 max. all phases. Ref Test Para. 5.9 LIMITS TEST DESCRIPTION Output Open and Short. Ref. Test Para. 5.9.5 $24^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 22 °C Temperature Table IIIB 31. 400210GHz Frequency: 12 to 17 dBm 13.8 dBm RF Output Power: $10 \pm 0.2 \text{ VDC}$ <u>/0,0</u> VDC Input Voltage Table IIIB 116.6 mA Input Current: No Damage or Degradation _____ Acceptable Results: Calculate maximum Frequency Accuracy (both positive and negative), $\Delta f_{acc} = \Delta f_S$ (Use worst-case Δf_S from 7.2, 7.7, and 7.22A) + Δf_H (from 7.22A) + Δf_L (from 7.23A): .564 % -451 MHz (Positive) Table IIIB Maximum $\Delta f_{acc} =$ - 312 - 52 MHz (Negative) Table IIIB Calculate maximum Short-term Frequency Stability (both positive and negative), $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use worst-case Δf_V and Δf_T from 7.2 thru 7.6): <u>+1.166</u> MHz (Positive) Table IIIB Maximum $\Delta f_{V+T} =$ - 2.823 MHz (Negative) Table IIIB Calculate maximum overall RF Output Power Stability (both positive and negative), $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T} \text{ (Use worst-case } \Delta P_{V} \text{ and } \Delta P_{T} \text{ from 7.2 thru 7.6)} + \Delta P_{H} \text{ (from 7.22A)} + \Delta P_{L} \text{ (from 7.23A)};$ dB (Positive) dB (Negative) 1.0 dB Maximum $\Delta P_{OV} =$ -1.0 dB Accept ____ Reject _____ Date 11-21-47 Test Performed by

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68	
56348	Α	1300823	B3		
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Date

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Channel 3 LO

DRO (P/N: 1336610-3, S/N: 85094)

Solid State

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

INTINE BIXIT		
LITTON TYPE LS E 9036 AM	_	AESD 1336610- <u>3</u>
SERIAL NUMBER: 85094	QUAL TEST	ACCEPT TEST
Basic Electrical Test; Ref. Test Para. 5.2.2		
SPECIFICATION	MEASUREMENT AT Tnom	EI°C LIMIT
Measurement at Vop=10 VDC		. *
Temperature	°C	Table IIIB
Input Voltage	/o. o VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current) 9 4 mA	Table IIIB
Input Power, P _{diss}	1.94 W DC	P _{diss} max
Frequency, f _{Tnom}	50.300 38 GHz	Table IIIB
RF Output Power, P _{fnom}	13.7 dBm	12 to 17 dBm
Frequency Setting Accuracy,		
$\Delta f_S = f_{Tnom} - F_o$		•
Frequency and RF Output Power Variation W Measurement at 9.5 VDC or at VDC Temperature		Table IIIB
Input Voltage	5.5 VDC	9.5 VDC or Para. 5.2.3.2
nput Current	792 mA	Table IIIB
Frequency, f _{meas}	5 9. 800 Fo GHz	Table IIIB
RF Output Power, P _{meas}	/3.7 dBm	12 to 17 dBm
The Galpart I of the Inicas		
Measurement at 10.5 VDC or at 10.5 VI	DC	
Temperature	21.2 °C	Table IIIB
Input Voltage	10.5 VDC	10.5 VDC or Para. 5.2.3.3
Input Current		Table IIIB
Frequency, f _{meas}	57,30041 GHz	Table IIIB
RF Output Power, P _{meas}	<u>/3.7</u> dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_T$	nom•	
Δf _V at 9.5 VDC or at VDC	= <u>+.02</u> MHz	•
Δf_V at 10.5 VDC or at VDC		
Calculate RF Output Power Variation, $\Delta P_V =$	P _{meas} - P _{Tnom} ,	
ΔP _V at 9.5 VDC or at VDC	= 6 dB	
ΔP_V at 10.5 VDC or at VDC		
Ac	ccept Reject	
Test Performed by Litton QA	Date 12-15-97 Date DEC 16 297	

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 38 OF 68
56348	A	1300823	В3	·

	FUNCTIONAL PERFORMANCE	recte
	TA SET FINAL DAT	
initial ba	TIA SETTINAL DAT	A SET
LITTON TYPE LS E 9036 Ar	4	AESD 1336610- 3
SERIAL NUMBER: 85094		ACCEPT TEST \vee
obidita i o i i barin a de de l'al		
Temperature Testing at T=10°C, R	tef. Test Para. 5.2.5.1	
SPECIFICATION	MEASUREMENT AT T=10° ±1°	C LIMIT
Measurement at Vop=10 VDC	•	
Temperature	//.`o °C	10° ± 1°C
Input Voltage	/0,0 VDC	10.0 ± 0.2 VDC
Input Current	79 Z mA	Table IIIB
	/ · 9 2 W DC	Pdiss max
Input Power, P _{diss}		
Frequency, f _{10°C}	50.299 22 GHz	Table IIIB
RF Output Power, P _{10°C}	13.7dBm	12 to 17 dBm
Frequency and RF Output Power V	ariation With Voltage, Ref. Test Par	ra 5 2 5 1
Measurement at 9.5 VDC or at		u 5.2.5.1
Temperature	//. ° °C	Table IIIB
Input Voltage	9.5 VDC	9.5 VDC or Para. 5.2.3.2
input Voltage input Current	/90 mA	Table IIIB
Frequency, f _{meas}	50.299 20 GHz	Table IIIB
RF Output Power, P _{meas}	13.7 dBm	12 to 17 dBm
Rr Output rower, I meas	dBm	12 to 17 dBm
Measurement at 10.5 VDC or at	10.5 VDC	
Temperature	//.o °C	Table IIIB
Input Voltage	16.5 VDC	10.5 VDC or Para. 5.2.3.3
Input Current	750 mA	Table IIIB
Frequency, f _{meas}	50,299 19 GHz	Table IIIB
RF Output Power, P _{meas}	13.7 dBm	12 to 17 dBm
Tel Output Fower, Fmeas		12 10 11 0511
Calculate Frequency Variation, Δf_V	$f = f_{\text{meas}} - f_{10^{\circ}\text{C}}$:	1
Δf_V at 9.5 VDC or at	VDC = MH	Ĭz
Δf_V at 10.5 VDC or at	VDC =	Iz
Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Tnom})	= <u>-1.16</u> MH	Iz
	. AD D D	
Calculate RF Output Power Variation		
ΔP _V at 9.5 VDC or at	$VDC = \frac{\varphi}{dB}$	
ΔP _V at 10.5 VDC or at	$VDC = \frac{\phi}{dB}$	
ΔP_T at 10.0 VDC (= $P_{10^{\circ}C}$ - P_{Tnom})	= <u>Ø</u> dB	
	Accept \checkmark	Reject
Test Performed by	Date 12-15	
Litton Q.A.	Date DEC 1 6 1	1997 -
Litton Q.A.	Date Dec 10	

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 39 OF 68
56348	A	1300823	B3	

Solid State

TEST DATA SHEET 7.4

	ONAL PERFORMANCE TE ' FINAL DATA	
LITTON TYPE LS <u>E 9036 AM</u> SERIAL NUMBER: <u>85094</u>	QUAL TEST	AESD 1336610- 3 ACCEPT TEST V
Temperature Extreme Testing at Tmin, Ref	E. Test Para. 5.2.5.2	
SPECIFICATION	MEASUREMENT AT Tmir	<u>n ±1°C</u> LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output. Power Variation Measurement at 9.5 VDC or at		Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or at 10.5 value of the Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	VDC 1 °C 10-5 VDC 189 mA 50.29765 GHz 13.8 dBm	Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - \Delta f_V = 0.5 \text{ VDC or at}$ VDC = $\Delta f_V = 0.5 \text{ VDC or at}$ VDC = $\Delta f_T = 0.0 \text{ VDC} = 0.00 \text{ VDC}$		MHz MHz MHz
Calculate RF Output Power Variation, $\Delta P_V = \Delta P_V$ at 9.5 VDC or at VDC = ΔP_V at 10.5 VDC or at VDC = ΔP_T at 10.0 VDC (= P_{Tmin} - P_{Tnom})	= <u> </u>	_ dB _ dB _ dB
Test Performed by Litton Q.A. Accept	Date 12-15-9 Date DEC 16 199	7
CODE IDENT NO. SIZE	i i	EV SHEET 40 OF 68

Solid State





INITIAL DATA SET TINAL DATA SET					
LITTON TYPE LS = 98 SERIAL NUMBER: 8	036 AM 5094	QUAL TEST	AESD 1336610- 3 ACCEPT TEST V		
Temperature Testing at T=3	0°C, Ref. Te	est Para. 5.2.5.3			
SPECIFICATION		MEASUREMENT AT T=	=30° ±1°C LIMIT		
Measurement at Vop=10 VI Temperature Input Voltage Input Current	OC .	29. 0 °C 10.0 VDC 195 mA 1.95 W DC	$30^{\circ} \pm 1^{\circ}$ C $10.0 \pm 0.2 \text{ VDC}$ Table IIIB Pdiss max		
Input Power, P _{diss} Frequency, f _{30°C} RF Output Power, P _{30°C}		/,95 W DC 50,30149 GHz /5.7 dBm	Table IIIB 12 to 17 dBm		
Frequency and RF Output P Measurement at 9.5 VDC or Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		ion With Voltage, Ref. Test Par VDC 7.5 VDC 193 mA S030152 GHz 13.7 dBm	ra 5.2.5.3 Table IIIB 9.5 VDC or Para. 5.2.3. Table IIIB Table IIIB 12 to 17 dBm		
Measurement at 10.5 VDC of Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	or at <u>10.5</u>	√0. ° C √0. ° VDC √0. ° VDC √0. ° GHz √0.3° 1 S 3 GHz √0.3° 1 S 3 GHz √0.3° 1 S 3 GHz	Table IIIB 10.5 VDC or Para. 5.2.3 Table IIIB Table IIIB 12 to 17 dBm		
Calculate Frequency Variation Δf_V at 9.5 VDC or at Δf_V at 10.5 VDC or at Δf_T at 10.0 VDC (= $f_{30^{\circ}C}$ - f_{Tne}	VD	$_{\text{cas}} - f_{30^{\circ}\text{C}}$: $DC = $	Hz		
Calculate RF Output Power ΔP_V at 9.5 VDC or at ΔP_V at 10.5 VDC or at ΔP_T at 10.0 VDC (= $P_{30^{\circ}C}$ - $P_$	VI	$P_{V} = P_{meas} - P_{30^{\circ}C}:$ $DC = $			
Test Performed by	The state of the s	Accept	· 		
CODE IDENT NO. 56348	SIZÉ A	NUMBER 1300823	REV SHEET 41 OF 68 B3		

LITTON / SOLID STATE DIVISION / 3251 OLCOTT ST / SANTA CLARA, CA 95054

Solid State

TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

INITIAL DATA SE	I FINAL DATA SET _	
LITTON TYPE LS E 9036 AM SERIAL NUMBER: 85094		D 1336610- 3 EPT TEST
Temperature Extreme Testing at Tmax, Ref.	Test Para. 5.2.5.4	
SPECIFICATION	MEASUREMENT AT Tmax ±1°C	LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmax} RF Output Power, P _{Tmax}	43.2 °C 10. VDC 197 mA 1.97 WDC 50302≥3 GHz 13.7 dBm	Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation Varia	With Voltage, Ref. Test Para 5.2.5.4 OC	Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or at	DC	Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ - Δf_V at 9.5 VDC or at VDC = Δf_V at 10.5 VDC or at VDC = Δf_T at 10.0V (= f_{Tmax} - f_{Tnom})	± φ MHz MHz	
Calculate RF Output Power Variation, $\Delta P_V = \Delta P_V$ at 9.5 VDC or at VDC = ΔP_V at 10.5 VDC or at VDC = ΔP_T at 10.0 VDC (= P_{Tmax} - P_{Tnom})	$ \begin{array}{ccc} & \phi & dB \\ \hline & \phi & dB \end{array} $	
Test Performed by Litton Q.A. Accept	Date 12-15-97 Date 0FC 16 1997	

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 42 OF 68
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TEST DATA SHEET 7 23B

		IONAL PERFORMANCE TE	ESTS	
INI		T FINAL DATA		
LITTON TYPE LS E SERIAL NUMBER:		QUAL TEST	AESD 1336610- 3 ACCEPT TEST V	
Frequency Pulling and Loa	ad VSWR 2.5:1 n	nax. all phases. Ref Test Para	ı. 5.9	
TEST DESCRIPTION			LIMITS	
Output Open and Short. Re	ef. Test Para. 5.9.	.5		
Temperature Frequency: RF Output Power: Input Voltage Input Current: Results:	22 50.30039 13:7 10 194 +.39	°C GHz dBm VDC mA Acceptable	24°C ± 5°C Table IIIB 12 to 17 dBm 10 ± 0.2 VDC Table IIIB No Damage or Degradation	
Calculate maximum Frequency Accuracy (both positive and negative), $\Delta f_{acc} = \Delta f_S$ (Use worst-case Δf_S from 7.2, 7.7, and 7.22A) + Δf_H (from 7.22A) + Δf_L (from 7.23A):				
Maximum $\Delta f_{acc} =$	+.68	_ MHz (Positive) MHz (Negative)	Table IIIB Table IIIB	
Calculate maximum Short- $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use wo		Stability (both positive and ne Δf_T from 7.2 thru 7.6):	egative),	
Maximum $\Delta f_{V+T} =$	+2.49	_ MHz (Positive) _ MHz (Negative)	Table IIIB Table IIIB	
		ver Stability (both positive and ΔP_T from 7.2 thru 7.6) + ΔP_T	I negative), P_H (from 7.22A) + ΔP_L (from 7.23A):	
Maximum $\Delta P_{OV} =$	<u>+.4</u> 2	_ dB (Positive) _ dB (Negative)	1.0 dB -1.0 dB	
:	Acce	pt Reject	-	
Test Performed by	DH /20	Date 12	1-15-97	
Litton Q.A.	(30)	る 型 Date <u>DE</u>	C 1 6 1997	

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68
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Channel 4 LO

DRO (P/N: 1336610-4, S/N: 85038)

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET _____ FINAL DATA SET _____

INITIAL DATA	SEIINAL DA	AIA JLI	
LITTON TYPE LS E 9036 AF/A		AESD	13366104
SERIAL NUMBER: 85038	QUAL TEST		EPT TEST V
SEIGAE NO. VIDEIG		-	
Basic Electrical Test: Ref. Test Para. 5.2.2	•		
SPECIFICATION	MEASUREMENT AT T	nom ±1°C	LIMIT
Measurement at Vop=10 VDC	: .		
Temperature	<u>22.4 °C</u>		Table IIIB
Input Voltage	10. <i>δ</i> VDC		$10.0 \pm 0.2 \text{ VDC}$
Input Current	198 mA		Table IIIB
Input Power, P _{diss}	<u>1.98</u> W DC		P _{diss} max
Frequency, f _{Tnom}	52.80022 GHz	•	Table IIIB
RF Output Power, P _{Tnom}	12.4 dBm		12 to 17 dBm
Frequency Setting Accuracy,	+.22_MHz	•	:
$\Delta f_S = f_{Tnom} - F_o$			•
======================================	•		
Frequency and RF Output Power Variation Wit	h Voltage, Ref. Test Para	5.2.3	- -
Measurement at 9.5 VDC or at VDC			
Temperature	<u>22.5</u> °C		Table IIIB
Input Voltage	<u> </u>		9.5 VDC or Para. 5.2.3.2
Input Current	196mA		Table IIIB
Frequency, f _{meas}	52.80012 GHz		Table IIIB
RF Output Power, P _{meas}	12.4 dBm		12 to 17 dBm
10.51/00	3		
Measurement at 10.5 VDC or atVDC	225 <u>°</u> ℃.		Table IIIB
Temperature			10.5 VDC or Para. 5.2.3.3
Input Voltage	10.5 VDC		Table IIIB
Input Current	196 mA		Table IIIB
Frequency, f _{meas}	52,80022 GHz		12 to 17 dBm
RF Output Power, P _{meas}	<u> 12.</u> 낙 dBm		12 to 17 ubin
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{The}$	om		,
Δf_V at 9.5 VDC or at VDC =	<u></u>	MHz	
Δf_V at 10.5 VDC or at VDC =		MHz	
	•		
Calculate RF Output Power Variation, $\Delta P_V = P$	meas - P _{Tnom}		
ΔP_{V} at 9.5 VDC or at VDC =	= <u>4</u>	dB	
ΔP_{V} at 10.5 VDC or at VDC =	<u> </u>	.dB	
· · · · · · · · · · · · · · · · · · ·	/		
Acc	ept Reject		
Test Performed by	Date 12-3-97		
Litton QA (1.95)	Date DEC 0 9 1997		
() ()			
CODE IDENT NO.	NUMBER	REV	SHEET 38 OF 68
	1200022	ים ו	

	TE	ST DATA S	HEET 7.3	,		1-401
•	FUNCTION	AL PERFO	RMANCI	E TESTS	,	
INITIAL	DATA SET _					
				_		
LITTON TYPE LS E 903	6 AF/A			AESE	1336610- 4	
SERIAL NUMBER: 850		UAL TEST		ACCE	EPT TEST V	
3EIG. IL 140.4122.44		•	•			
Temperature Testing at T=10°C	Ref. Test Par	ra. 5.2.5.1				
			-			
<u>SPECIFICATION</u>	MEASU	REMENT A	T T=10° ±	±1°C	LIMIT	
Measurement at Vop=10 VDC		1	20		100 / 100	
Temperature	_	10.2	_°C		10° ± 1°C	
Input Voltage		10.0	_ VDC		$10.0 \pm 0.2 \text{ VDC}$	
Input Current		197	_mA	•	Table IIIB	
Input Power, P _{diss}	_	1.97	_ W DC		Pdiss max	
Frequency, $f_{10^{\circ}C}$		52.80152	_GHz	•	Table IIIB	
RF Output Power, P _{10°C}	_	12.5	_dBm		12 to 17 dBm	
•					•	
Frequency and RF Output Power	er Variation Wi	th Voltage,	Ref. Test I	Para 5.2.5.1	-	
Measurement at 9.5 VDC or at	VD0					ere.
Temperature	-	10.1	_°C		Table IIIB	-(C)
Input Voltage	* &	9.5	VDC	. The second second	9.5 VDC or Para. 5.2	2.3.2 `∴
Input Current		195	mA .	4 - 4 -	Table IIIB	
Frequency, f _{meas}		52,80153	GHz		Table IIIB	
RF Output Power, P _{meas}	The second second	725	dBm	, and the second second	12 to 17 dBm	
To output to wor, I meas		•	_ 			
Measurement at 10.5 VDC or a	t VE	C 🚆 🧻	e La grada est	trige jarij		
Temperature	BEET SECTION	100	_°C -	المجاورة المحارجين	Table IIIB	
Input Voltage	r na senjenje jeda 12 Kaland al dostava (25 - 17)	10.5	VDC **	The speed of	10.5 VDC or Para. 5.	2.3.3
Input Current		195	mA		Table IIIB	
Frequency, f _{mess}		52.8053	The second the second		Table IIIB	
RF Output Power, Pmess		125	dBm		12 to 17 dBm	
Kr Output I ower, I mess		14.	•		,	
Calculate Frequency Variation,	$\Delta f_v = f_{vv} - f_{vv}$			· %		
Δf _v at 9.5 VDC or at		-	<u>φ</u>	VIHz		
Δf _V at 10.5 VDC or at	VDC =	+	.01	VIHz 💮 🐔		
Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Taxon})	_			MHz		
217 at 10.0 720 (110-C 1180m)						
Calculate RF Output Power Va	riation, $\Delta P_V = 1$	P _{meas} - P _{10°C} :				
ΔP _v at 9.5 VDC or at	VDC =			iB		
ΔP _v at 10.5 VDC or at	VDC =		<u>\$</u>	iB		
ΔP _T at 10.0 VDC (=P _{10*C} -P _{Tnoo}	<u> </u>	<u>-</u>	t. 1 d	iB		
			Accept_	Re	ject	
Test Performed by DH		Date	12-3-	97		Vi.,
Litton Q.A.	00	Date	DEC 0.4	1007		
	27		DEC 0 0	. 201		
CODE IDENT NO.	SIZE	NUMBER		REV	SHEET 39 OF 68	
56348	Δ	1300823		B3		

TEST DATA SHEET 7.4

	ONAL PERFORMANCE TESTS	,
INITIAL DATA SET	FINAL DATA SET _	
LITTON TYPE LS E 9036 AF/A	AESI	D 1336610- 4
SERIAL NUMBER: 35038		EPT TEST V
Temperature Extreme Testing at Tmin, Ref	Test Para. 5.2.5.2	
SPECIFICATION	MEASUREMENT AT Tmin ±1°C	LIMIT
Measurement at Vop=10 VDC		
Temperature	°C	Table IIIB
Input Voltage	10.0VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	196 mA	Table IIIB
Input Power, P _{diss}	1.96 W DC	Pdiss max
Frequency, f _{Tmin}	52.802.19 GHz	Table IIIB
RF Output Power, P _{Tmin}	12.5 dBm	12 to 17 dBm
Ta Superiore, T (min		·
Frequency and RF Output Power Variation	With Voltage, Ref. Test Para 5.2.5.2	<u>.</u>
Measurement at 9.5 VDC or at V	DC	
Temperature	<u></u> 6°C	Table IIIB
Input Voltage	<u>9,5</u> VDC	9.5 VDC or Para 5.2.3.2
Input Current	194 mA	Table IIIB
Frequency, f _{meas}	52.80220 GHz	Table IIIB
RF Output Power, P _{meas}	12,5 dBm	12 to 17 dBm
•		
Measurement at 10.5 VDC or at		
Temperature	°C	Table IIIB
Input Voltage	(o.5VDC ·	10.5 VDC or Para 5.2.3.3
Input Current	<u>194</u> mA	Table IIIB
Frequency, f _{meas}	<u>52.802 20</u> GHz	Table IIIB
RF Output Power, P _{mess}	(2.5dBm	12 to 17 dBm
		ı
Calculate Frequency Variation, $\Delta f_V = f_{meas}$.
Δf_V at 9.5 VDC or at VDC =		
Δf_{V} at 10.5 VDC or at VDC =		
Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom})	+1.97MHz	
Calculate RF Output Power Variation, ΔP _V	= P - P ·	
ΔP _v at 9.5 VDC or at VDC:	The state of the s	
	=dB	
ΔP_{T} at 10.0 VDC (= P_{Tmin} - P_{Tnom})	db	
Accep	ot √ Reject	
Test Performed by	Date (2-3-47)	
	Date .	
	DEC 0 2 1231	OFFICE AS OF AS
CODE IDENT NO. SIZE	NUMBER REV	SPEET 40 OF 68
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t tttani / eat in et att nivi	SION / 2251 OI COTT ST / SANTA	CTARA CA 95054

TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS

INIT		SET FINAL		<u> </u>
TITTONITYDEIS - A.	· > / A T /	(A	AFSI	D 13366104
LITTON TYPE LS = 90 SERIAL NUMBER: 35		QUAL TEST		EPT TEST
SERIAL NUMBER: 05	0 20	Q0/Æ 1201		
Temperature Testing at T=30	°C, Ref. Te	st Para. 5.2.5.3	•	e e
SPECIFICATION		MEASUREMENT A	T T=30° ±1°C	LIMIT
Measurement at Vop=10 VD	C			
Temperature		<u>3o.6_</u> °C		$30^{\circ} \pm 1^{\circ}C$
Input Voltage		10.0 VDC		$10.0 \pm 0.2 \text{ VDC}$
Input Current		198 mA		Table IIIB
Input Power, P _{diss}		1.98 W DC	}	Pdiss max
Frequency, $f_{30^{\circ}C}$		52.79938 GHz		Table IIIB
RF Output Power, P _{30°C}		12.3 dBm	i .	12 to 17 dBm
1d Output 10 Work, 130-6				;
Frequency and RF Output Po Measurement at 9.5 VDC or			t Para 5.2.5.3	- -
Temperature		30.6 ℃		Table IIIB
Input Voltage		9.5 VDC		9.5 VDC or Para. 5.2.3.2
Input Current		196mA		Table IIIB
Frequency, f_{meas}		52,79938 GHz		Table IIIB
RF Output Power, P _{meas}		12.3 dBm		12 to 17 dBm
C. Output Fower, I meas		ubm		12 to 17 doin
Measurement at 10.5 VDC o	r at	VDC		
Temperature		<u>30.6</u> °C		Table IIIB
Input Voltage		10.5VDC		10.5 VDC or Para. 5.2.3.3
Input Current		196 mA		Table IIIB
Frequency, f _{meas}		52, 79938 GHz		Table IIIB
RF Output Power, Pmess		12.3 dBm		12 to 17 dBm
-				,
Calculate Frequency Variation			•	·
Δf_V at 9.5 VDC or at		$\mathbf{C} = \frac{\varphi}{\mathbf{C}}$	MHz	
Δf_V at 10.5 VDC or at		$C = \frac{\phi}{\phi}$	MHz	
Δf_T at 10.0 VDC (= $f_{30^{\circ}C}$ - f_{Tno}	,m)	=84	MHz	
	37. ! A	n n .		
Calculate RF Output Power		$P_V - P_{\text{meas}} - P_{30^{\bullet}C}$: $OC = \emptyset$	_dB	
ΔP_V at 9.5 VDC or at		$C = \frac{\varphi}{\phi}$	_dB	
ΔP_V at 10.5 VDC or at			_uB dB	
ΔP_{T} at 10.0 VDC (= $P_{30^{\circ}C}$ - P_{T}	(nom)	=	_ub	
		Accept	√ Rejec	et
Test Performed by	281	· <u> </u>	3-97	
Litton Q.A.	1000	Date DEC 0-9	1007	
X : =:	(\(\sigma_{\sigma}\)) 5500		
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 41 OF 68
56348	Α	1300823	B3	

TEST DATA SHEET 7.6

INIT		SET FINAL D		<u></u>
LITTON TYPE LS <u>E 9</u> 0	36 AE/A		AESI	D 1336610- 4
SERIAL NUMBER: 8		QUAL TEST		EPT TEST
Temperature Extreme Testin	g at Tmax,	Ref. Test Para. 5.2.5.4		
<u>SPECIFICATION</u>		. MEASUREMENT AT	Tmax ±1°C	LIMIT
Measurement at Vop=10 VD	C			
Temperature		<u>44</u> °C		Table IIIB
Input Voltage		10.0 VDC		$10.0 \pm 0.2 \text{ VDC}$
Input Current		199 mA		Table IIIB
Input Power, P _{diss}		1,99 W DC		Pdiss max
Frequency, f_{Tmax}		52.79826 GHz		Table IIIB
• • • • • • • • • • • • • • • • • • • •		12.2 dBm	i	12 to 17 dBm
RF Output Power, P _{Tmax}		<u> </u>	,	12 to 17 dbm
Frequency and RF Output Po	wer Variati	on With Voltage, Ref. Test	Para 5.2.5.4	;
Measurement at 9.5 VDC or	at	_ VDC		-
Temperature		<u> </u>		Table IIIB
Input Voltage		q.5 VDC		9.5 VDC or Para 5.2.3.2
Input Current		mA		Table IIIB
Frequency, f _{meas}		52.19826 GHz		Table IIIB
RF Output Power, P _{meas}		12.2 dBm		12 to 17 dBm
•				
Measurement at 10.5 VDC o	r at	VDC		
Temperature		<u>44</u> °C		Table IIIB
Input Voltage		VDC		10.5 VDC or Para 5.2.3.3
Input Current		52.798 197 MA		Table IIIB
Frequency, f _{meas}		52,798 26 GHz		Table IIIB
RF Output Power, Pmess		12.2dBm		12 to 17 dBm
Calculate Frequency Variation	VE	OC =	MHz MHz	•
Δf_V at 10.5 VDC or at	VL	$C = \frac{\phi}{\phi}$		
Δf_T at 10.0V (= f_{Tmax} - f_{Tnom})		=1.96	MHz	
Calculate RF Output Power	Variation, Δ	$P_{V} = P_{mess} - P_{Tnom}$:		
ΔP _V at 9.5 VDC or at			dB	
ΔP _v at 10.5 VDC or at		$DC = \frac{d}{d}$	dB	
ΔP_T at 10.0 VDC (= P_{Tmax} - P_T	Tnom)	=2	dB	
	Houp			
•	Α	ccept Reject		
Test Performed by	DH	Date <u>12-3</u>	-97	
Litton Q.A.	(0)	Date		
-	(Q.4)	DEC. 0.a	1997	
CODE IDENTITION	NATE:	ATD MED.	DEV	CERTET 42 OF 60
CODE IDENT NO.	SIZE	NUMBER	REV	SPEET 42 OF 68
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Litton Q.A.

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		TOT DATA CHETT	220		
•		TEST DATA SHEET 7.			
		IONAL PERFORMAN		,	
INIT	IAL DATA SE	ET FINAL I	DATA SET		
LITTON TYPE LS = 9	036 AF/A			AESD 13366104	
LITTON TYPE LS = 9. SERIAL NUMBER:	85038	QUAL TEST		ACCEPT TEST	
Frequency Pulling and Load	VSWR 2.5:1	max. all phases. Ref Te	st Para. 5.9		
		•			
TEST DESCRIPTION	•		LIMI	<u>rs</u>	
		•			
Output Open and Short. Ref	. Test Para. 5.9	0.5			
•	•				
Temperature	21.6	_°C	24°C :	± 5°C	
Frequency:	52.80080	GHz	Table	IIIB	
RF Output Power:	12.4		12 to 1	17 dBm	
Input Voltage	10	VDC	10 ± 0	.2 VDC	
Input Current:	197	mA	Table	IIIB	
Results:		Acceptable -	No Da	mage or Degradation	
		- •			
Calculate maximum Frequer	ncv Accuracy (both positive and negati	ve).		
$\Delta f_{acc} = \Delta f_S$ (Use worst-case				Afr (from 7.23A):	
Ziacc Ziig (Obe Worst case		,,, <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>		<u> </u>	
Maximum $\Delta f_{acc} =$	+.81	MHz (Positive)	Table	IIIR	
Trium Chacc		MHz (Negative)	Table		
		(11111111111111111111111111111111	Tuble :		
Calculate maximum Short-te	rm Frequency	Stability (both positive	and negative)		
$\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use wors		- · ·	and negative),		
$\Delta i_{V+T} - \Delta i_V + \Delta i_T $ (esc work	st-case any and	тыт пош 7.2 ини 7.0).			
Maximum Δf _{V+T} =	+1.98	MHz (Positive)	Table 1	IIIR	
Μαλιπαιπ Διν+Τ	-1.96	MHz (Negative)	Table I		
		MILLE (Negative)	Table		
Calculate maximum overall	DE Output Pos	wer Stability (both positi	ive and negativ	, اه	
	-	• • •	_	7.22A) + ΔP_L (from 7.23A):	
$\Delta r_{OV} = \Delta r_V + \Delta r_T (Ose Wo$	ist-case Ai V ai	ud Zu T Hoin 7.2 und 7.0	η · Δι Η (Hom	7.22A) Zi [(HOIII 7.25A).	
Maximum ΔP _{OV} =	+ 4	_ dB (Positive)	1.0 dB		
Waxiiidii 21 ov –		_ dB (Negative)	-1.0 dF		
		— m (rackanac)	-1.0 di	,	
	A 00:	ept Reject			
Accept Reject					
Tast Darformed her	DН	Data	17 5-07		
Test Performed by	<u> </u>	Date	12-5-97		

	CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68
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Date

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DRO (P/N: 1336610-5, S/N: 85029)

56348

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

INITIAL DATA	SET FINAL DATA SI	ET <u>/</u>	ţ
LITTON TYPE LS <u>E 9036 AG/A</u> SERIAL NUMBER: <u>A5029</u>		AESD 1336610 ACCEPT TEST	
Basic Electrical Test; Ref. Test Para. 5.2.2			
SPECIFICATION	MEASUREMENT AT Tnom ±1	°C LIMIT	
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P_{diss} Frequency, f_{Tnom} RF Output Power, P_{Tnom} Frequency Setting Accuracy, $\Delta f_{S} (= f_{Tnom} - F_{o})$		Table IIIB 10.0 ± 0.2 VDC Table IIIB P _{diss} max Table IIIB 12 to 17 dBm	
Frequency and RF Output Power Variation With Measurement at 9.5 VDC or atQ, VDC Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	Voltage, Ref. Test Para 5.2.3	Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm	
Measurement at 10.5 VDC or at <u>/o.</u> VDC Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm	
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tnon}$	n,		
Δf_V at 9.5 VDC or at \underline{Q} , \underline{C} VDC = Δf_V at 10.5 VDC or at \underline{Q} , \underline{C} VDC = Calculate RF Output Power Variation, $\Delta P_V = P_m$	MHz		
ΔP_{V} at 9.5 VDC or at $\frac{9.5}{\sqrt{8.5}}$ VDC = ΔP_{V} at 10.5 VDC or at $\frac{10.5}{\sqrt{8.5}}$ VDC =			
Acce			
6.10	Date 16/7/97 Date 0C7 1 6 1397		(
CODE IDENT NO. SIZE	NUMBER REV	V SHEET 38 OF 68	

1300823

LITTON / SOLID STATE DIVISION / 3251 OLCOTT ST / SANTA CLARA, CA 95054

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TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS

	TA SET FINAL DATA	
LITTON TYPE LS E 9036 AG	./_	AESD 1336610- 5
SERIAL NUMBER: 85029	QUAL TEST	ACCEPT TEST \checkmark
DEIGNIE NOMBER		
Temperature Testing at T=10°C, Re	f. Test Para. 5.2.5.1	
SPECIFICATION	MEASUREMENT AT T=10° ±1°C	LIMIT
Measurement at Vop=10 VDC	. -	
Temperature	<u>9.8</u> .°c	$10^{\circ} \pm 1^{\circ}C$
Input Voltage	10.0 VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current		Table IIIB
Input Power, P _{diss}	1,85 W DC	Pdiss max
Frequency, $f_{10^{\circ}C}$	53.597155 GHz	Table IIIB
RF Output Power, P _{10°C}	/2.3 dBm	12 to 17 dBm
Measurement at 9.5 VDC or at		
Temperature	<u>9,5</u> °C	Table IIIB
Input Voltage	<u>9.5</u> VDC	9.5 VDC or Para. 5.2.3.2
Input Current		Table IIIB
Frequency, f _{meas}	53.597169 GHz	Table IIIB
RF Output Power, P _{meas}		12 to 17 dBm
Measurement at 10.5 VDC or at _/o	S VDC	
Temperature	°C	Table IIIB
Input Voltage	10.5 VDC	10.5 VDC or Para. 5.2.3.3
Input Current	184 mA	Table IIIB
Frequency, f _{meas}	53.597/70 GHz	Table IIIB
RF Output Power, P _{meas}	<u>/ 2.3</u> dBm	12 to 17 dBm
-		
Calculate Frequency Variation, $\Delta f_V =$		
Δf_V at 9.5 VDC or at 9.5	VDC =	
Af _V at 10.5 VDC or at /0/5	VDC =	
Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Tnom})	=	•
Calculate RF Output Power Variation	$P_{V} = P_{meas} - P_{10°C}$:	
ΔP_{V} at 9.5 VDC or at \underline{q}	$VDC = \frac{d}{dB}$	
ΔP _v at 10.5 VDC or at 10.5	VDC =	
ΔP_T at 10.0 VDC (= $P_{10^{\circ}C}$ - P_{Tnom})	=, / dB	
1 TO C THOMP		
m . p . c 11	Accept	Reject
Test Performed by	Date 10/7/97	_
Litton Q.A.	Date 0CT 1 6 1997	
CODE IDENT NO. SIZE	NUMBER RE	SHEET 39 OF 68
56348 A	1300823 B	i e e e e e e e e e e e e e e e e e e e

TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS FINAL DATA SET

	FINAL D		<u>/</u>	
LITTON TYPE LS = 9036 AG/A SERIAL NUMBER: 85029	QUAL TEST		1336610- <u>\$\sigma\circ\circ\circ\circ\circ\circ\circ\cir</u>	
Temperature Extreme Testing at Tmin, Ref.	Test Para. 5.2.5.2			
SPECIFICATION	MEASUREMENT AT	Tmin ±1°C	LIMIT	
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}			Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm	
Frequency and RF Output. Power Variation Measurement at 9.5 VDC or at	-	Para 5.2.5.2	Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm	
Measurement at 10.5 VDC or at / ** V Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	/DC /°C /		Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm	
Calculate Frequency Variation, $\Delta f_V = f_{meas} - \Delta f_V$ at 9.5 VDC or at $Q_1 \subseteq Q_2 \subseteq Q_3 \subseteq Q_4 \subseteq Q$	_+.0	MHz		
Calculate RF Output Power Variation, $\Delta P_V = \Delta P_V$ at 9.5 VDC or at $\mathcal{L} \subset \mathcal{L} \subset \mathcal{L}$ VDC = ΔP_V at 10.5 VDC or at $\mathcal{L} \subset \mathcal{L} \subset \mathcal{L}$ VDC = ΔP_T at 10.0 VDC (= P_{Tmin} - P_{Tnom})	: <u> </u>	dB dB 2. dB		
Test Performed by Litton Q.A. Accept	t Reject Date 10/7 Date OCT 16		· .	<u>(</u>
CODE IDENT NO. 56348 A LITTON / SOLID STATE DIVIS	NUMBER 1300823 JON / 3251 OLCOTT S	B3	SHEET 40 OF 68 CLARA, CA 95054	

Solid State

TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

	INITIAL DATA	SET FINA	L DATA SET _	<u> </u>
LITTON TYPE LS <u>E</u> SERIAL NUMBER: _	9036 AG/A 85029	QUAL TEST		D 1336610- <u>\$</u> EPT TEST
Temperature Testing at	T=30°C, Ref. To	est Para. 5.2.5.3		
SPECIFICATION		MEASUREMEN'	TAT T=30° ±1°C	LIMIT
Measurement at Vop=1 Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{30°C} RF Output Power, P _{30°C}			DC A DC Hz	30° ± 1°C 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Outp Measurement at 9.5 VD Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	OC or at 9		OC A Hz	Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 V Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		VDC 	A Iz	Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Va Δf_V at 9.5 VDC or at	9,5 VI 10,5 VI	$f_{\text{cas}} - f_{30^{\circ}\text{C}}$: $f_{\text{C}} = \frac{\text{t.008}}{\text{t.016}}$ $f_{\text{C}} = \frac{\text{t.016}}{\text{cas}}$	_	
Calculate RF Output Po ΔP_V at 9.5 VDC or at	9.5 VI	$P_{V} = P_{\text{meas}} - P_{30^{\circ}\text{C}}$ $DC = OC = OC = OC = OC$	dB dB dB	
Test Performed byLitton Q.A		Accep Date Date	t <u>V</u> Rejec 19/7/97	et
CODE IDENT NO. 56348	SIZE A	NUMBER 1300823	REV B3	SHEET 41 OF 68

TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

INITIAL DATA SE	ET FINAL DATA SE	T
LITTON TYPE LS E 9036 AG/A	_ A	ESD 1336610 <i>s</i> _
SERIAL NUMBER: 85029	QUAL TEST A	CCEPT TEST V
Temperature Extreme Testing at Tmax, Ref	. Test Para. 5.2.5.4	
SPECIFICATION	MEASUREMENT AT Tmax ±	1°C LIMIT
Measurement at Vop=10 VDC		. •
Temperature	44./°C	Table IIIB
Input Voltage	10.0 VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current		Table IIIB
Input Power, P _{diss}	1.87 W DC	Pdiss max
Frequency, f _{Tmax}	53,595332 GHz	Table IIIB
RF Output Power, P _{Tmax}	/2.3 dBm	12 to 17 dBm
Thiax		
Frequency and RF Output Power Variation	With Voltage, Ref. Test Para 5.2.	5.4
Measurement at 9.5 VDC or at _9.5 V	DC	
Temperature	<u> 44,4 °</u> °C	Table IIIB
Input Voltage	9.5 VDC	9.5 VDC or Para 5.2.3.2
Input Current	/S mA	Table IIIB
Frequency, f _{meas}	53,595332 GHz	Table IIIB
RF Output Power, P _{meas}		12 to 17 dBm
A LANGE TO CAMPO	m.c	
Measurement at 10.5 VDC or at 10.5 VDC		
Temperature	44.5_ °C	Table IIIB
Input Voltage		10.5 VDC or Para 5.2.3.3
Input Current		Table IIIB
Frequency, f _{meas}	53.595 336 GHz	Table IIIB
RF Output Power, P _{meas}	/ <i>2.3</i> dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ -	f_ ·	
Δf_V at 9.5 VDC or at $\frac{q_S}{\sqrt{2}}$ VDC =		
Δf_V at 10.5 VDC or at $\frac{1}{2}$ VDC =		
$\Delta f_{T} \text{ at } 10.0 \text{ V} (= f_{Tmax} - f_{Tnom}) = 0.0 The second of the second$		
Trom/	= <i> /. 438</i> MHz	
Calculate RF Output Power Variation, ΔP_V =	= P _{meas} - P _{Tnom} :	
ΔP_V at 9.5 VDC or at 9.5 VDC =		
ΔP_{V} at 10.5 VDC or at $\sqrt{\rho_{C}}$ VDC =	= Ø dB	
ΔP_{T} at 10.0 VDC (= P_{Tmax} - P_{Tnom}) =	dB	
Accep	nt / Reject	
r . p c 11		
	Date <u>/0/7/97</u>	
Litton Q.A.	Date OCT 1 6 1997	
(e M a)		

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 42 OF 68
56348	A	1300823	В3	·
LITTON / SOLII	D STATE D	IVISION / 3251 OLCOTT	ST / SANTA	CLARA, CA 95054

		ONAL PERFORMAL		
INI		T FINAL		<u> </u>
LITTON TYPE LS E 9	2036 AG/A	•		AESD 1336610- 5
SERIAL NUMBER:	000 H4/H	QUAL TEST		ACCEPT TEST V
SERIAL NOWIDER.	83027	QOME TEST		ACCELL LEGI
Frequency Pulling and Loa	ıd VSWR 2.5:1 r	nax. all phases. Ref T	est Para. 5.9	
TEST DESCRIPTION			LIMI	TS.
Output Open and Short. Re	ef. Test Para. 5.9.	5		
Temperature	23.0	°C	24°C	± 5°C
Frequency:	53,596733	GHz	Table	IIIB
RF Output Power:	12,3	dBm	12 to	17 dBm
Input Voltage	10.0	VDC	10 ± 0	0.2 VDC
Input Current:	186	mA	Table	IIIB
Results:		Acceptable	No Da	amage or Degradation
$\Delta f_{acc} = \Delta f_{S}$ (Use worst-case) Maximum $\Delta f_{acc} =$	-	7.7, and 7.22A) + Δf _H (_ MHz (Positive) MHz (Negative)	(from 7.22A) + Table Table	IIIB
Calculate maximum Short- $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use wo	-			•
Maximum $\Delta f_{V+T} =$		_ MHz (Positive) _ MHz (Negative)	Table Table	
Calculate maximum overal $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T}$ (Use w				ve), $17.22A$ + ΔP_L (from 7.23A):
Maximum $\Delta P_{OV} =$	 5	dB (Positive) _dB (Negative)	1.0 dE -1.0 d	
	Acce	ept Reject _		
Test Performed by	7 +	Date	10/10/97	7
Litton Q.A.	(S M	Date	OCT 1 6 1997	
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68

56348 A 1300823 B3	CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68
	56348	Α	1300823	B3	·

Channel 6 LO

DRO (P/N: 1336610-6, S/N: 85024)

Solid State

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET ______ FINAL DATA SET ______

				· ··	
LITTON TYPE LS = 40	26 AU /A		AES	SD 1336610-6	
SERIAL NUMBER: 85	7)2/1	OUAL TEST		CEPT TEST NA	···
· · · · · · · · · · · · · · · · · · ·			:		-
Basic Electrical Test: Ref. Te	st Para. 5.2.2	•			
SPECIFICATION		MEASUREMENT AT	Tnom ±1°C	LIMIT	
	_		•		
Measurement at Vop=10 VD0	J	୬ ዴ ℃	•	Table trees.	
Temperature			•	Table IIIB	
Input Voltage Input Current			:	10.0 ± 0.2 VDC Table IIIB	
Input Current Input Power, P _{diss}		<u> </u>	•		
Frequency, f _{Tnom}		54.400 08GHz		P _{diss} max Table IIIB	
RF Output Power, P _{Tnom}		12.3 dBm		12 to 17 dBm	
Frequency Setting Accuracy,		O.OS MHz		12 to 17 ubit	
$\Delta f_{S} (= f_{T_{nom}} - \dot{F}_{o})$					
- · · · · · · · · · · · · · · · · · · ·			•		
Frequency and RF Output Pov			a 5.2.3		
Measurement at 9.5 VDC or a	ıt V				
Temperature		<u>ావ</u> వ_ంC	:	Table IIIB	
Input Voltage		VDC		9.5 VDC or Para. 5.2.3.2	
Input Current		mA	•	Table IIIB	
Frequency, f _{meas}		54.4mos GHz	:	Table IIIB	
RF Output Power, P _{meas}		<u> 13.3</u> dBm		12 to 17 dBm	
Management at 10 5 VDC an		UTVC			
Measurement at 10.5 VDC or Femperature	at	vi∧. 22°C		Table IIIB	
Input Voltage		7,770,770		10.5 VDC or Para, 5,2,3,3	
Input Current		VDC mA		Table IIIB	
Frequency, f _{meas}		54.40009 GHz	•	Table IIIB	
RF Output Power, Pmeas		dBm		12 to 17 dBm	
meas				COTTABIL	
Calculate Frequency Variation	$\Delta f_{V} = f_{meas} -$	from	•	<u>:</u>	
		rivin,			
\f _V at 9.5 VDC or at	_ VE	C =	_MHz		
\(\Delta f_v\) at 10.5 VDC or at	VE	C = <u>ao</u> r	_MHz		
3.1.1. 55.					
Calculate RF Output Power V	ariation, ΔP_V	= P _{meas} - P _{Tnom} ,			
AP _V at 9.5 VDC or at	3.00	Ç =	4D		
AP _V at 10.5 VDC or at		C =	_dB _dB		
n v at 10.5 v bc of at		<u> </u>	_0.6		
	2	Accept Reject	•		
	•	kedept Kejeet			
Test Performed by	1	Date 3-14-98	,		
itton QA	145	Date			
	3.01	MAR 2 6 1998	-		
CODE IDENT NO.	SIZE	MIMDED	DEW	CUEET 20 OF CO	
56348		NUMBER 1300823	REV	SHEET 38 OF 68	
JUJ40	A	1300823	B3:		

Solid State

56348

TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET

LITTON TYPE LS E 90	36 AH/A	AESD 1336610- 6
SERIAL NUMBER: 8		ACCEPT TEST
Temperature Testing at T=10	O°C. Ref. Test Para. 5.2.5.1	:
SPECIFICATION	MEASUREMENT AT T=10° ±1	LIMIT
Measurement at Vop=10 VD		
Temperature	°C	$10^{\circ} \pm 1^{\circ}C$
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	<u> a </u> mA	Table IIIB
Input Power, P _{diss}	<u>1.91</u> W DC	Pdiss max
Frequency, f _{10°C}	54 399 99 GHz	Table IIIB
RF Output Power, P _{10°C}	13.3_dBm	12 to 17 dBm
Frequency and RF Output Po Measurement at 9.5 VDC or	ower Variation With Voltage, Ref. Test Pa	ara 5.2.5.1
Тетрегатиге	°C	Table IIIB
Input Voltage	9.5_VDC	9.5 VDC or Para. 5.2.3.2
Input Current		Table IIIB
Frequency, f _{meas}	54.399 99GHz	Table IIIB
RF Output Power, Pmeas	<u>)3,3</u> dBm	12 to 17 dBm
Measurement at 10.5 VDC or	r at VDC	
Temperature	°C	Table IIIB
Input Voltage	VDC	10.5 VDC or Para. 5.2.3.3
Input Current	189 mA	Table IIIB
Frequency, f _{meas}	54.40000 GHz	Table IIIB
RF Output Power, P _{meas}	(3.3_dBm	12 to 17 dBm
Calculate Frequency Variatio	on, $\Delta f_V = f_{mess} - f_{10^{\circ}C}$:	,
Δf_V at 9.5 VDC or at	VDC = MI	Hz
Δf_V at 10.5 VDC or at		Hz
Δf_{T} at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Tnon}	m) = <u>-0.09</u> MI	Hz
Calculate RF Output Power V	Variation, $\Delta P_{\mathbf{V}} = P_{\text{meas}} - P_{10^{\circ}\text{C}}$:	
ΔP _V at 9.5 VDC or at		
ΔP _v at 10.5 VDC or at	VDC = dB	,
ΔP_T at 10.0 VDC (= P_{10} °C - P_{Tn}	nom) = dB	
Test Performed by	Date Date Date MAR 2 0	Reject
CODE IDENT NO.	SIZE NUMBER	REV SHEET 39 OF 68

B3

1300823

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Solid State

TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS

ITTON TYPE LS <u>E 9036</u> ERIAL NUMBER: <u>850</u> 2			ESD 1336610- 6 CCEPT TEST ALCA
emperature Extreme Testing at	Imin, Ref. Test Para. 5.2	2.5.2	
PECIFICATION	MEASUREM	MENT AT Tmin ±1	°C LIMIT
leasurement at Vop=10 VDC			
emperature	<u> </u>	_ °C	Table IIIB
nput Voltage	10	VDC	$10.0 \pm 0.2 \text{ VDC}$
nput Current	190	_ mA	Table IIIB
nput Power, P _{diss}	1.90	_ W DC	Pdiss max
requency, f _{Tmin}	54.3998	ے د GHz	Table IIIB
F Output Power, P _{Tmin}		5 dBm	12 to 17 dBm.
requency and RF Output Power	Variation With Voltage,	Ref. Test Para 5.2.	5.2
leasurement at 9.5 VDC or at 👱	VDC	•	
emperature		°C	Table IIIB
put Voltage	9.5	VDC	9.5 VDC or Para 5.2.3.2
iput Current	188	_ mA	Table IIIB
requency, f _{meas}	<u> 54.3998</u>	ட் GHz	Table IIIB
F Output Power, P _{meas}	13.35		12 to 17 dBm
feasurement at 10.5 VDC or at	VDC		
emperature		°C	Table IIIB
nput Voltage	10.5	VDC	10.5 VDC or Para 5.2.3.3
aput Current	189	mA	Table IIIB
requency, f _{meas}	54.39985		Table IIIB
F Output Power, P _{meas}	13.35	dBm	12 to 17 dBm
alculate Frequency Variation, Δ	t.=f .f	:	
f _V at 9.5 VDC or at	VDC =	o MH	[2
f _v at 10.5 VDC or at	VDC =	MH	
f_T at 10.0 VDC (= f_{Tmin} - f_{Tnom})		_ 0.2L MH	
alculate RF Output Power Varia	tion AP. = P P.	,	
P _v at 9.5 VDC or at	VDC = VDC	c dB	
P _V at 10.5 VDC or at	VDC =		
P_T at 10.0 VDC (= P_{Tmin} - P_{Tnom})	VDC =		
rrat 10.0 VDC (-r _{Tmin} -r _{Tnom})	_	dB) •
B	•	ject	
est Performed by ON	Date	3-14-98	
itton Q.A.	Date	MAR 2 0 1998	
	ZE NUMBER	REV	SHEET 40 OF 68
56348	1300823	В3	

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Solid State

TEST DATA SHEET 7.5

	JNCTIONAL PERFORMANCE TO TA SET NA FINAL DATA	
LITTON TYPE LSE 9036 AN SERIAL NUMBER: 85024	QUAL TEST	AESD 1336610- GACCEPT TEST
Temperature Testing at T=30°C. Ref.	Test Para. 5.2.5.3	
SPECIFICATION	MEASUREMENT AT T=3	0° ±1°C LIMIT
Measurement at Vop=10 VDC		:
Temperature	<u></u> °C	$30^{\circ} \pm 1^{\circ}C$
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	mA	Table IIIB
Input Power, Pdise	1. 92 W DC	Pdiss max
Frequency, f _{30°C}	54.40022 GHz	Table IIIB
RF Output Power, P _{30°C}	13.2 dBm	12 to 17 dBm
Frequency and RF Output Power Var		5.2.5.3
Measurement at 9.5 VDC or at		• .
Temperature	3. °C	Table IIIB
Input Voltage	<u>9.5</u> VDC	9.5 VDC or Para. 5.2.3.2
Input Current		Table IIIB
Frequency, f _{meas}	54,40023 GHz	Table IIIB
RF Output Power, P _{meas}	13.2 dBm	12 to 17 dBm
Measurement at 10.5 VDC or at	VDC	
Temperature	<u>31</u> °C	Table IIIB
Input Voltage	VDC	10.5 VDC or Para. 5.2.3.3
Input Current	190 mA	Table IIIB
Frequency, f _{meas}	54. 40023 GHz	Table IIIB
RF Output Power, P _{meas}	(3, 2 dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V =$	f _{meas} - f _{30°C} :	
Δf_V at 9.5 VDC or at	VDC = <u>o.o.</u> MHz	
Δf_V at 10.5 VDC or at	VDC =	
Δf_{-} at 10.0 VDC (= f_{-} f_{-})	= MHa	

 Δf_V at 10.5 VDC or Δf_T at 10.0 VDC (= $f_{30^{\circ}C}$ - f_{Tnom}) Calculate RF Output Power Variation, $\Delta P_{v} = P_{meas} - P_{30^{\circ}C}$: ΔP_V at 9.5 VDC or at \sim VDC = dBΔP_V at 10.5 VDC or at _ VDC = $d\mathbf{B}$ ΔP_T at 10.0 VDC (= $P_{30^{\circ}C}$ - P_{Tnom}) $d\mathbf{B}$

		Accept Reject
Test Performed by Litton Q.A.	ON SE	Date AR 2 (1994
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CODE IDENT NO. SIZE NUMBER REV SHEET 41 OF 68 56348 A 1300823 **B3**

Solid State

TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS

, INI	HAL DATA	A SEI NAL FINAL	DATA S	E
LITTON TYPE LS E 90 SERIAL NUMBER: 82				AESD 1336610- 6 ACCEPT TEST NA
Temperature Extreme Testi	ng at Tmax,	Ref. Test Para. 5.2.5.4	:	
SPECIFICATION	•	MEASUREMENT A	T Tmax	±1℃ LIMIT
Measurement at Vop=10 VI	DC			
Temperature	:	<u>Lf Lf °C</u>		Table IIIB
Input Voltage		VDC		$10.0 \pm 0.2 \text{ VDC}$
Input Current		192 mA		Table IIIB
Input Power, P _{diss}	•	1.92 W DC	}	Pdiss max
Frequency, $f_{T_{max}}$	•	<u>54. 399 ag</u> GHz	•	Table IIIB
RF Output Power, P _{Tmax}		dBm	;	12 to 17 dBm
Ter Output tower, I Imax				12 to 17 ubin
Frequency and RF Output P			st Para 5.1	2.5.4
Measurement at 9.5 VDC or	Lar		:	Table mp
Temperature		<u>44</u> °C	:	Table IIIB
Input Voltage		<u>9.5</u> VDC		9.5 VDC or Para 5.2.3.2
Input Current	•		i	Table IIIB
Frequency, f _{meas}	•	<u>54.39998</u> GHz	:	Table IIIB
RF Output Power, Pmeas		<u>13.0</u> dBm	į	12 to 17 dBm
Measurement at 10.5 VDC	orat -	VDC		
Temperature		<u>~~4</u> °C		Table IIIB
Input Voltage				10.5 VDC or Para 5.2.3.3
Input Current		191 mA	į	Table IIIB
Frequency, f _{meas}		54.39996 GHz	:	Table IIIB
RF Output Power, Pmeas		130 dBm	:	12 to 17 dBm
meas				THE COLUMN
Calculate Frequency Variati	on, $\Delta f_V = f_m$	eas - f _{Tmax} :		
Δf _V at 9.5 VDC or at		OC = 0. 01	MHz	
Δf_V at 10.5 VDC or at	VI	OC = 0.03	MHz	
Δf_T at 10.0V (= f_{Tmax} - f_{Tnom})		<u> </u>	_ MHz	
Calculate RF Output Power	Variation. Δ	$p_{v} = p_{} - p_{}$		
ΔP _V at 9.5 VDC or at		OC =	dB	
ΔP _V at 10.5 VDC or at)C =	dB	
ΔP_T at 10.0 VDC (= P_{Tmax} - P		=	dB	
i with the contract	i nom/		_ 42	
	Α	ccept Reject		
Test Performed by	21	Date 3_1	4-98	
Litton Q.A.	(47	Date MAR	2 6 1998	
	1160			
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 42 OF 68
56348	A	1300823	B3	5111111 -2 OF 00

Solid State

TEST DATA SHEET 7.7 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET NA FINAL DATA SET

LITTON TYPE LSE 9036AH/A	A COD I	776610	
	AL TEST ACCEPT TEST	336610- 6	
Power Supply Immunity, Ref. Test Para, 5.2.4			
		:	
SPECIFICATION	MEASUREMENT AT Thom ±1°C	LIMIT	
Initial Measurement			
Temperature	<u></u> °C	Table IIIB	
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$	
Input Current	mA	Table IIIB	
Input Power	1.91 W DC	Pdiss max	
Frequency (f _{Trom})	54. 400.27GHz	Table IIIB	
RF Output Power	133 dBm	12 to 17 dBm	
Frequency Setting Accuracy, Δf_5 (= f_{Tnoon} - F_o)	MHz		
Performance After Short Circuit on Power Supply	: Ref Test Para 5.2.4.2		
Input Voltage	VDC	10.0 ± 0.2 VDC	
Input Current		Table IIIB	
Input Power	<u>). 4 2</u> W DC	Pdiss max	
Frequency	<i>54.4∞22</i> GHz	Table IIIB	
RF Output Power		12 to 17 dBm	
Over Voltage: Ref Test Para 5.2.4.3	·		
2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		1 :	* •,
Overvoltage Input Voltage	2 <u>8</u> VDC	+28V	
Performance After Input Overvoltage		:	
Input Voitage	VDC	10.0 ± 0.2 VDC	
Input Current	mA	Table IIIB	
Input Power	L.g. W DC	Pdiss max	
Frequency	54.40025GHz	Table IIIB	
RF Output Power	13.3 dBm	12 to 17 dBm	
Reverse Polarity: Ref Test Para 5.2.4.4		•	
Reverse Input Voltage	toVDC	$-10.0 \pm 0.2 \text{ VDC}$	
Performance After Reverse Input Voltage			
COMMINGE AND ACTORS IN DATA VOILAGE			
Input Voltage	VDC	10.0 ± 0.2 VDC	
Input Current		Table IIIB	
Input Power	W DC	Pdiss max	
Frequency, f _{Tnom}	<u>54.40023</u> GHz	Table IIIB	
RF Output Power		12 to 17 dBm	
Frequency Setting Accuracy, Δf_5 (= $f_{Tnom}-F_o$)	O.23MHz	· · !	
	ccept Reject	! :	
Test Performed by 1921	Date 3-14-98		
Litton Q.A.	Date <u>MAR 2 0 1998</u>		C.
CODE IDENT NO.	NUMBER REV	SHEET 43 OF 68	
56348 A	1300823 B3	; ; · · · · · · · · · · · · · · · · · ·	
LITTON / SOLID STATE DIVI	ISION / 3251 OLCOTT ST / SAN		

		TEST DATA SHEET	l l		
× ••		TIONAL PERFORMA		,	
INI	TIAL DATA SE	ET <u> </u>	LDAIASEI		
				4 POD 488444	
LITTON TYPE LSE 90		OUAL TEST	_	AESD 1336610-6	,
SERIAL NUMBER:	5024	, QUALIESI	<u>·</u>	ACCEPT TEST	3/1
Frequency Pulling and Lo	ad VSWR 2.5:1	max. all phases. Ref	Test Para. 5.9		
TEST DESCRIPTION			LIN	II <u>TS</u>	
Output Open and Short. R	ef. Test Para. 5.9).5			
Temperature	かみ	°C	24%	C ± 5°C	
Frequency:	54.40036		:	le IIIB	
RF Output Power:	13.3	dBm	í	o 17 dBm	
Input Voltage		~~	;	: 0.2 VDC	
Input Current:		_ vbc _mA	:		
-	<u> 192</u>			le IIIB	
Results:		_ Acceptable	NO I	Damage or Degradation	
Calculate maximum Freque $\Delta f_{acc} = \Delta f_{S}$ (Use worst-calcaximum $\Delta f_{acc} =$		·	(from 7.22A)	+ Δf _L (from 7.23A): e IIIB e IIIB	
Calculate maximum Short $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use we Maximum $\Delta f_{V+T} =$	-	- · · •)):	e IIIB	
	-0.27	MHz (Negative)	Tabl	e IIIB	
Calculate maximum overat $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T}$ (Use v Maximum $\Delta P_{OV} =$	Il RF Output Pov vorst-case ΔP _V at 0.35 0.6	wer Stability (both pos nd ΔP _T from 7.2 thru? dB (Positive) dB (Negative)	sitive and negative ΔP_H (from $1.0 d$ $-1.0 d$	m 7.22A) + ΔP_L (from 7.1B	23A):
	Acce	ept Reject _	:		
Test Performed by	дн	Date	3_17_98		
Litton Q.A.	(UT-7N)	Date	MAR 2 0 19	98	
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68	
56348	A	1300823	B3		
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Channel 7 LO

DRO (P/N: 1336610-7, S/N: 85022)

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

LITTON TYPE LS E 9036 AJ/A		AESD 13366107
SERIAL NUMBER: 85022	OUAL TEST	ACCEPT TEST
Basic Electrical Test; Ref. Test Para. 5.2.2		
SPECIFICATION	MEASUREMENT AT Tnom	<u> LIMIT</u>
		-
Measurement at Vop=10 VDC		
Temperature	<u>21.6</u> °C	Table IIIB
Input Voltage		$10.0 \pm 0.2 \text{ VDC}$
Input Current		Table IIIB
Input Power, Pdiss		P _{diss} max
Frequency, f _{Tnom}	54,939960GHz	Table IIIB
RF Output Power, P _{Tnom}	/2.8 dBm	12 to 17 dBm
Frequency Setting Accuracy,	- 0.04 MHz	
$\Delta f_{S} (= f_{Tnom} - F_{o})$		
3 (-1 moin - 0)		•
Frequency and RF Output Power Variation With	h Voltage Ref Test Para 5 2 3	
Measurement at 9.5 VDC or at 7.50 VDC	i volugo, kon rost ratu 5.2.5	
Temperature	21.6 °C	Table IIIB
Input Voltage	9.50 VDC	9.5 VDC or Para. 5.2.3.2
Input Current	192 mA	
•		Table IIIB
Frequency, f _{meas}	54.939960 GHz	Table IIIB
RF Output Power, P _{meas}		12 to 17 dBm
Management 10.5 MDC / MDC	,	
Measurement at 10.5 VDC or at/o, 5 VDC		m. 1.1
Temperature		Table IIIB
Input Voltage	10,50 VDC	10.5 VDC or Para. 5.2.3.3
Input Current		Table IIIB
Frequency, f _{meas}	54.939960 GHz	Table IIIB
RF Output Power, P _{meas}	dBm	12 to 17 dBm
	•	
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tnot}$	m>	
_	1	
Δf_V at 9.5 VDC or at $Q.5$ VDC =	MHz	
Δf_V at 10.5 VDC or at <u>10.5</u> VDC =	MHz	
	·	
Calculate RF Output Power Variation, $\Delta P_V = P_m$	eas - P _{Tnom} ,	
	,	
ΔP_V at 9.5 VDC or at VDC =	dB	
ΔP_V at 10.5 VDC or at 10.5 VDC =	9 dB	
Acce	pt Reject	
Test Performed by	Date 9/8/97	
Litton OA	Date SEP 2 5 1997	
CODE IDENT NO. SIZE	NITIMBED DE	V CHEET 20 OF 60
	NUMBER RE	
56348 A	1300823 B:	
LITTON / SOLID STATE DIVIS	ION / 3251 OLCOTT ST / SA	NTA CLARA, CA 95054

TEST DATA SHEET 7.3

		ICTIONAL PERFORM		6.7
1	NITIAL DATA	SET FIN	AL DATA SET _	
LITTON TYPE LS E	9036 AJ/A		AES	D 1336610- Z
SERIAL NUMBER: _		QUAL TEST		EPT TEST
Temperature Testing a	t T=10°C, Ref.	Test Para. 5.2.5.1		
SPECIFICATION	V	IEASUREMENT AT T	=10° ±1°C	LIMIT
Measurement at Vop=	10 VDC			
Temperature		<u>10.7</u> °C		$10^{\circ} \pm 1^{\circ}C$
Input Voltage		10.00 V	DC	$10.0 \pm 0.2 \text{ VDC}$
Input Current			A.	Table IIIB
Input Power, P _{diss}		1.93 W	DC	Pdiss max
Frequency, f _{10°C}		54.939392 G	Hz	Table IIIB
RF Output Power, P _{10°}	С	/2.7 dF	3m	12 to 17 dBm
Frequency and RF Out Measurement at 9.5 VI		tion With Voltage, Ref. VDC	Test Para 5.2.5.1	•
Temperature				Table IIIB
Input Voltage		9.50 V	DC .	9.5 VDC or Para. 5.2.3.2
Input Current	•		A	Table IIIB
Frequency, f _{meas}		54.939392 GI	Hz	Table IIIB
RF Output Power, Pmes	13	12.7 dF	3m	12 to 17 dBm
Measurement at 10.5 V	DC or at /o.	T VDC		
Temperature		10,6 °C	2	Table IIIB
Input Voltage		10.50 VI	DC	10.5 VDC or Para. 5.2.3.3
Input Current		/9/ m	A	Table IIIB
Frequency, f _{meas}		54.939391 GI		Table IIIB
RF Output Power, P _{mea}	ıs		3m	12 to 17 dBm
Calculate Frequency V				
Δf_v at 9.5 VDC or at _		DC = 4	MHz	
Δf_V at 10.5 VDC or at		DC = -100/	/ MHz	
Δf_T at 10.0 VDC (= f_{Tm}	_{in} -f _{10°C})	=56	9 MHz	
Calculate RF Output P	દ TAbam ower Variation	ΑP., = P - P	F	
ΔP_V at 9.5 VDC or at _		DC =	d B	
ΔP_V at 10.5 VDC or at		DC = 9	dB	
AP- at 10.0 VDC (=P-	· *P)	= ~./	dB	1. A. 1.
ΔP_T at 10.0 VDC (= P_T	TNORM			
			· 	eject
Test Performed by	021	· · · · · · · · · · · · · · · · · · ·	9/8/47	$i^{(r)}$
Litton Q.A.	- (FW)	Date St	EP 2 5 1997	
CODE IDENT NO.	Size	NUMBER	REV	SHEET 39 OF 68
56348	A	1300823	B2	J. J

LITTON / SOLID STATE DIVISION / 3251 OLCOTT ST / SANTA CLARA, CA 95054

TEST DATA SHEET 7.4

INITIA		T V FINAL D		
LITTON TYPE LS <u>E 9036</u> SERIAL NUMBER: <u>850</u>		QUAL TEST		D 1336610- 7 EPT TEST
Temperature Extreme Testing	at Tmin, Ref	. Test Para. 5.2.5.2		
SPECIFICATION		MEASUREMENT AT	Tmin ±1°C	LIMIT
Measurement at Vop=10 VDO Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}		-0.8 °C /0.50 VDC 192 mA 1.92 W DC 54.938654 GHz 12.6 dBm		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Po Measurement at 9.5 VDC or a Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}			t Para 5.2.5.2	Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	at <u>/o.5</u> \	/DC <u>-0.9</u> °C <u>/0.50</u> VDC <u>/9/</u> mA <u>54.938649</u> GHz <u>/26</u> dBm		Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation Δf_V at 9.5 VDC or at9.5 Δf_V at 10.5 VDC or at10.5 Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom}	_ VDC = _ VDC =	- 0.0	MHz	
Calculate RF Output Power V ΔP_V at 9.5 VDC or at 9.5 ΔP_V at 10.5 VDC or at 10.5 VDC or at ΔP_T at 10.0 VDC (= P_{Tmin} - P_{Tmin}	VDC =	=	dB dB dB	·•
Test Performed by	Accep	Date SEP 2 8		
CODE IDENT NO. 56348 LITTON / SOLID	SIZE A STATE DIVIS	NUMBER 1300823 SION / 3251 OLCOTT S	REV B2 ST / SANTA	SHEET 40 OF 68 CLARA, CA 95054

TEST DATA SHEET 7.5

	NCTIONAL PERFORMANC A SETV FINAL DA	A
LITTON TYPE LS <u>E 90-36 AJ/A</u> SERIAL NUMBER: <u>85022</u>	QUAL TEST	AESD 1336610- 7 ACCEPT TEST V
Temperature Testing at T=30°C, Ref. 7	Test Para. 5.2.5.3	
SPECIFICATION	MEASUREMENT AT	T=30° ±1°C LIMIT
Measurement at Vop=10 VDC		. *
Temperature	<i>3o</i> ℃	$30^{\circ} \pm 1^{\circ}C$
Input Voltage	10.00 VDC	$10.0 \pm 0.2 \text{VDC}$
Input Current	195 mA	Table IIIB
Input Power, P _{diss}	1.95 W DC	Pdiss max
Frequency, f _{30°C}		
	54.940344 GHz	Table IIIB
RF Output Power, P _{30°C}		12 to 17 dBm
Frequency and RF Output Power Varia Measurement at 9.5 VDC or at	VDC <u>29.7</u> °C <u>9.5</u> °C VDC mA GHz	Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB
RF Output Power, P _{meas}	/2.8dBm	12 to 17 dBm
Measurement at 10.5 VDC or at <u>/o.s</u> Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	VDC 29.6 °C 10.49 VDC 193 mA 54.940330 GHz 12.8 dBm	Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_m$	- fama'	
Δf_V at 9.5 VDC or at 9.5 V	DC =	IHz IHz IHz
Calculate RF Output Power Variation, A	$\Delta P_{V} = P_{max} - P_{300C}$	
	DC = dE dE	3
•	DC = dE	
ΔP _T at 10.0 VDC (=P _{Tmin} -P _{30*e})	= Ø dF	
302 TNORM		
	Accept	Reject
Test Performed by	Date <u>9/8/9</u>	<u> </u>
Litton Q.A.	Date SEP 2 5 18	<u>97</u>
CODE IDENT NO. SIZE	NUMBER	REV SHEET 41 OF 68
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LITTON / SOLID STATE DIVISION / 3251 OLCOTT ST / SANTA CLARA, CA 95054

TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS

INITIAL DATA SE	FINAL DATA SET_	
LITTON TYPE LS E 90 36 AJ/A	AFS	D 1336610- 7
SERIAL NUMBER: 85022		EPT TEST
Temperature Extreme Testing at Tmax, Ref	Test Para. 5.2.5.4	
SPECIFICATION	MEASUREMENT AT Tmax ±1°C	LIMIT
Measurement at Vop=10 VDC		
Temperature	<u> 44.0</u> ℃	Table IIIB
Input Voltage	10.00 VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	196 mA	Table IIIB
Input Power, P _{diss}	1,96 W DC	Pdiss max
Frequency, f _{Tmax}	54.940.336 GHz	Table IIIB
RF Output Power, P _{Tmax}	/2.8 dBm	12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at	•	•
Temperature	<i>44.6</i> °C	Table IIIB
Input Voltage	<u>9,49</u> VDC	9.5 VDC or Para 5.2.3.2
Input Current		Table IIIB
Frequency, f _{meas}	<u>54.940333</u> GHz	Table IIIB
RF Output Power, P _{meas}		12 to 17 dBm
Measurement at 10.5 VDC or at	/DC	
Temperature	<u>44.9</u> °C	Table IIIB
Input Voltage	10,50 VDC	10.5 VDC or Para 5.2.3.3
Input Current	194 mA	Table IIIB
Frequency, f _{meas}	54.940328 GHz	Table IIIB
RF Output Power, P _{meas}	/2.8 dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ -	f:	
Δf_V at 9.5 VDC or at _ 9.5 VDC =		
Δf_V at 10.5 VDC or at 10.5 VDC =		
Δf_T at 10.0V (= f_{meas} - f_{Tmax}) =	+ 0.376 MHz	
Calculate RF Output Power Variation, ΔP_V =	= P _{mess} - P _{Trom} :	
ΔP_V at 9.5 VDC or at 9.5 VDC =		
ΔP_v at 10.5 VDC or at(0.5 VDC =	= Ø dB	
ΔP_T at 10.0 VDC (= P_{moss} - P_{Tmax}) =	dB	w ** ·
Thax Thorm Accep	ot 🗸 Reject	
Test Performed by	Date 9/8/97	
Litton Q.A.	Date SEP 2 5 1997	

CODE IDENT NO. 56348	SIZE A	NUMBER 1300823	REV B2	SHEET 42 OF 68	
LITTON / SOLU	O STATE DI	VISION / 3251 OF COTT	AT/SANTA	CLARA CA 05054	

Temperature Frequency:

Input Voltage

Input Current:

Results:

RF Output Power:

Solid State

TEST DATA SHEET 7.23B FUNCTIONAL PERFORMANCE TES INITIAL DATA SET FINAL DATA S	
LITTON TYPE LS <u>~ 9036 AJ/A</u> SERIAL NUMBER: <u>&S022</u> QUAL TEST	AESD 1336610 ACCEPT TEST _
Frequency Pulling and Load VSWR 2.5:1 max. all phases. Ref Test Para.	5.9
TEST DESCRIPTION	LIMITS
Output Open and Short. Ref. Test Para. 5.9.5	
	24°C ± 5°C Table IIIB

12 to 17 dBm

 $10 \pm 0.2 \text{ VDC}$

No Damage or Degradation

Table IIIB

Calculate maximum Frequency Accuracy (both positive and negative), $\Delta f_{acc} = \Delta f_S$ (Use worst-case Δf_S from 7.2, 7.7, and 7.22A) + Δf_H (from 7.22A) + Δf_L (from 7.23A):

Acceptable .

dBm

VDC

mA

+ 0.274 MHz (Positive) Table IIIB Maximum $\Delta f_{acc} =$ # MHz (Negative) Table IIIB

Calculate maximum Short-term Frequency Stability (both positive and negative), $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use worst-case Δf_V and Δf_T from 7.2 thru 7.6):

10,00

+0.384 MHz (Positive) Table IIIB Maximum $\Delta f_{V+T} =$ -1.356 MHz (Negative) Table IIIB

Calculate maximum overall RF Output Power Stability (both positive and negative), $\Delta P_{OV} = \Delta P_V + \Delta P_T$ (Use worst-case ΔP_V and ΔP_T from 7.2 thru 7.6) + ΔP_H (from 7.22A) + ΔP_L (from 7.23A):

+. 005 4 43 (Positive) 1.0 dB Maximum $\Delta P_{OV} =$ dB (Negative) -1.0 dB

Reject Date Test Performed by SEP 2 5: 1987 - ------Date Litton Q.A.

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68
56348	A	1300823	B2	·

Channel 8 LO

DRO (P/N: 1336610-8, S/N: 85076)

Channel 8 LO

DRO (P/N: 1336610-8, S/N: 85076)

Solid State

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET_____ FINAL DATA SET_____

INITIAL DAT	A SET FINAL DATA S	SET
LITTON TYPE LS <u>E 9036 AK/A</u> SERIAL NUMBER: <u>85076</u>	QUAL TEST	AESD 1336610- Q ACCEPT TEST
SERIAL NUMBER. 05016	_ QUAL ILSI	Accel 1 1E51
Basic Electrical Test; Ref. Test Para. 5.2.2	•	
SPECIFICATION	MEASUREMENT AT Tnom ±	<u>l°C</u> LIMIT
Measurement at Vop=10 VDC	0	
Temperature	<u></u> °C	Table IIIB
Input Voltage		$10.0 \pm 0.2 \text{ VDC}$
Input Current	<u>195</u> mA	Table IIIB
Input Power, P _{diss}		P _{diss} max
Frequency, f _{Tnom}	55, 500 172 GHz	Table IIIB
RF Output Power, P _{Tnom}	13.0dBm	12 to 17 dBm
Frequency Setting Accuracy,		
$\Delta f_{S} (= f_{Tnom} - F_{o})$		
Frequency and RF Output Power Variation W Measurement at 9.5 VDC or at Q 5 VD		
Temperature	21.0℃	Table IIIB
Input Voltage	9.50 VDC	9.5 VDC or Para. 5.2.3.2
Input Current		Table IIIB
Frequency, f _{meas}	55.50075 GHz	Table IIIB
RF Output Power, P _{meas}	(3,0 dBm	12 to 17 dBm
Tu Output I ower, I meas		
Measurement at 10.5 VDC or at 10.5 VI		
Temperature	°C	Table IIIB
Input Voltage	<u>(0.50</u> VDC	10.5 VDC or Para. 5.2.3.3
Input Current	<u> 194 </u>	Table IIIB
Frequency, f _{meas}	55. 500 779 GHz	Table IIIB
RF Output Power, P _{meas}	13.0dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_T$	_	
Calculate Frequency Variation, My - Imeas - 1	i nom•	
Δf_V at 9.5 VDC or at <u>a.5</u> VDC	= <u>+.003</u> MHz	
Δf_V at 10.5 VDC or at VDC	$= \underline{-+.907} MHz$	
Calculate RF Output Power Variation, $\Delta P_V =$	P _{meas} - P _{Tnom} ,	
ΔP _V at 9.5 VDC or at <u>9.5</u> VDC ΔP _V at 10.5 VDC or at <u>10.5</u> VDC		
A	ccept Reject	
Took Donformed by	Data alaska	
Test Performed by	Date $\frac{9/22/4.7}{\text{SEP 2 5 897}}$	
Litton QA	Date Utility	
/ mm/		

	 /			
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 38 OF 68
56348	Α	1300823	B2	_

TEST DATA SHEET 7.3

	ICTIONAL PERFORMANCE T	•	į
INITIAL DATA	SET FINAL DATA	A SET	
LITTON TYPE LS E 9036 AK/A	1	AESD 1336610- &	
SERIAL NUMBER: 85076	QUAL TEST	ACCEPT TEST	
Temperature Testing at T=10°C, Ref. 7	Test Para. 5.2.5.1		
SPECIFIC ATION M	TEASUREMENT AT T=10° ±1°C	LIMIT	
SPECIFICATION M		2 200	
Measurement at Vop=10 VDC			
Temperature -	<u></u>	$10^{\circ} \pm 1^{\circ}C$	
Input Voltage	<u> (0.00</u> VDC	$10.0 \pm 0.2 \text{ VDC}$	
Input Current	194mA	Table IIIB	
Input Power, P _{diss}	1.94 WDC	Pdiss max	
Frequency, f _{10°C}	55.499913 GHz	Table IIIB	
RF Output Power, P _{10°C}	しろし dBm	12 to 17 dBm	
- 1770 7	dies With Welters Doc Toot Done	5251	
Frequency and RF Output Power Varia		13.2.3.1	
Measurement at 9.5 VDC or at <u>9.5</u>	\DC 	Table IIIB	
Temperature	9.50 VDC	9.5 VDC or Para. 5.2.3.2	
Input Voltage	192 mA	Table IIIB	é
Input Current		Table IIIB	1
Frequency, f _{meas}	55.499970GHz	12 to 17 dBm	
RF Output Power, P _{meas}	13.\dBm	12 to 17 dBm	
Measurement at 10.5 VDC or at	SVDC		
Temperature	<u>10./5</u> °C	Table IIIB	
Input Voltage	10.50 VDC	10.5 VDC or Para. 5.2.3.3	
Input Current	193 mA	Table IIIB	
Frequency, f_{meas}	55.499 981 GHz	Table IIIB	
RF Output Power, P _{meas}	(3.1dBm	12 to 17 dBm	
-	S		
Calculate Frequency Variation, $\Delta f_V = f_r$			
Δf_T at 10.0 VDC (= f_{Tmin} - $f_{10°C}$) Troc - Thorn	= <u>-,799</u> MH		
Calculate RF Output Power Variation,	$\Delta P_{V} = P_{\text{meas}} - P_{10^{\circ}\text{C}}$:		
	$DC = \underline{\phi} dB$		
	$DC = \underline{\phi} dB$		
ΔP_T at 10.0 VDC (= $P_{Tmin} - P_{10^{\circ}C}$)	= <u>+•/</u> dB		
O'C THORM	Accept	, Reject	
m . n . c 11	 	Kejeci	,
Test Performed by	Date 9/22/97	7	(
Litton Q.A.	Date <u>SEP 2-5</u> 199	4,	
CODE IDENT NO. SIZE	NUMBER 1	REV SHEET 39 OF 68	_
	1 1000000	no I	

	TEST DATA SHEET / TIONAL PERFORMANCET FINAL I	CE TESTS	<u> </u>
LITTON TYPE LS <u>E 9036 AK/A</u> SERIAL NUMBER: <u>85</u> 076	QUAL TEST		D 1336610- 8 EPT TEST
Temperature Extreme Testing at Tmin, R	Ref. Test Para. 5.2.5.2		
SPECIFICATION	MEASUREMENT AT	Tmin ±1°C	LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}	°C VDC 		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at9.5 Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		t Para 5.2.5.2	Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or at 10.5 Temperature Input Voltage Input Current Frequency, f_{meas} RF Output Power, P_{meas}	VDC 		Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{mer}$ Δf_V at 9.5 VDC or at $\underline{9.5}$ VDC Δf_V at 10.5 VDC or at $\underline{10.5}$ VDC Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom})	C =	o3 MHz	
Calculate RF Output Power Variation, ΔP_V at 9.5 VDC or at	C =	dB dB	
Test Performed by Litton Q.A.	cept $\sqrt{}$ Reject $\sqrt{}$ Date $\sqrt{}$ Date $\sqrt{}$ Date $\sqrt{}$	2/97 5 1997 ,	
CODE IDENT NO. SIZE 56348 A	NUMBER 1300823	REV B2	SHEET 40 OF 68

FUNCTI	ONAL PERFORMANC T FINAL D	E TESTS	✓	(; (;
LITTON TYPE LS E 9036 AK/A SERIAL NUMBER: 85076	QUAL TEST	AESD	1336610- <u></u>	
Temperature Testing at T=30°C, Ref. Test I	•			
SPECIFICATION	MEASUREMENT AT	T=30° ±1°C	LIMIT	
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{30°C} RF Output Power, P _{30°C}	29.6 °C 10.00 VDC 196 mA 1.96 W DC 55.501230 GHz 13.0 dBm		30° ± 1°C 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm	
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at VT Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	With Voltage, Ref. Test DC 29.8 °C 9.50 VDC 194 mA 55.501242 GHz 13.0 dBm	Para 5.2.5.3	Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm	(%)
Measurement at 10.5 VDC or at 10.5 Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	VDC		Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm	
Calculate Frequency Variation, $\Delta f_V = f_{meas} - \Delta f_V$ at 9.5 VDC or at	$= \frac{+.012}{012}$ $= \frac{+.446}{+.456}$ $= P_{meas} - P_{30°C}$	MHz MHz MHz dB dB	s t	
Test Performed by Litton Q.A.	Date 9/2: Date SEP 2	2/9/7 5 1997		Q
CODE IDENT NO. SIZE	NUMBER 1300823	REV B2	SHEET 41 OF 68	

Solid State

TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS

INITIAL DATA SET FINAL DATA SET					
LITTON TYPE LS E 9036 AK/A SERIAL NUMBER: 85076		AESD 1336610- 8 ACCEPT TEST V			
Temperature Extreme Testing at Tmax, Ref. Test Para. 5.2.5.4					
SPECIFICATION	MEASUREMENT AT Tmax	±1°C LIMIT			
Measurement at Vop=10 VDC Femperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmax} RF Output Power, P _{Tmax} Frequency and RF Output Power Variation		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm			
Measurement at 9.5 VDC or at		Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm			
Measurement at 10.5 VDC or at 10.5 V	VDC <u>44,8</u> °C <u>/0.50</u> VDC <u>/95</u> mA <u>55.5≈335</u> GHz /3.0 dBm	Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm			
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ - Δf_V at 9.5 VDC or at VDC = Δf_V at 10.5 VDC or at VDC = Δf_T at 10.0V (= f_{meas} - f_{Tmax})	= <u>+,011</u> MHz				
Calculate RF Output Power Variation, $\Delta P_V = \Delta P_V$ at 9.5 VDC or at $\underline{9.5}$ VDC = ΔP_V at 10.5 VDC or at $\underline{10.5}$ VDC = ΔP_T at 10.0 VDC (= P_{meas} - P_{Tmax})	=				
Test Performed by Litton Q.A.	Post	·			

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 42 OF 68
56348	Α	1300823	B2	

LITTON Solid State

INI	TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANO FINAL DATA SET FINAL D	CE TESTS
LITTON TYPE LS E 9	-36 AK/A	AESD 1336610- &
SERIAL NUMBER:	QUAL TEST	ACCEPT TEST V
	d VSWR 2.5:1 max. all phases. Ref Tes	t Para. 5.9
TEST DESCRIPTION		LIMITS
Output Open and Short. Re	ef. Test Para. 5.9.5	
Temperature	22.1 °C	24°C ± 5°C
<u>-</u>	55.500701 GHz	Table IIIB
Frequency: RF Output Power:	13. <u>0</u> dBm	12 to 17 dBm
•	10.00 VDC	$10 \pm 0.2 \text{ VDC}$
Input Voltage	195 mA	Table IIIB
Input Current: Results:	Acceptable	No Damage or Degradation
Calculate maximum Frequ $\Delta f_{acc} = \Delta f_S$ (Use worst-case	ency Accuracy (both positive and negative Δf_s from 7.2, 7.7, and 7.22A) + Δf_H (figure 1)	fom $7.22A$) + ΔI_L (from $7.23A$):
Maximum $\Delta f_{acc} =$	+ . 799 MHz (Positive) 030 MHz (Negative)	Table IIIB Table IIIB
Calculate maximum Short $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use we	term Frequency Stability (both positive positive forst-case Δf_V and Δf_T from 7.2 thru 7.6):	and negative),
	+, 594 MHz (Positive)	Table IIIB
$Maximum \Delta f_{V+T} =$	-1.198 MHz (Negative)	Table IIIB
Calculate maximum overa $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T} \text{(Use V)}$ Maximum $\Delta P_{OV} =$	Il RF Output Power Stability (both positive) dB (Positive) dB (Negative)	ve and negative), $D + \Delta P_H$ (from 7.22A) + ΔP_L (from 7.23A): 1.0 dB -1.0 dB
	Accept Reject	
Test Performed by	Date	9/24/97
Litton Q.A.	Date	SEP 2 5 1997
	NI MPED	REV SHEET 61 OF 68

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68
56348	A	1300823	B2	
303-10		TOTAL PACE OF COTT	DOT / COANTITA	CT ADA CA 95054

Channels 9-14 LOs

PLO No. 1 (P/N: 1348360-1, S/N: F01)

TCXO No.1 (P/N: 1348325-1, S/N: 9702-48683)

PLO No. 2 (P/N: 1348360-1, S/N: F02)

TCXO No.2 (P/N: 1348325-1, S/N: 9702-48684)

Summary of Test Results for AMSU-A Phase Locked Oscillator Testing Serial Numbers F01 and F02

Both PLO F01 and PLO F02 meet all requirements as defined in AE-26633, the PLO product specification. The following table summarizes how each unit meets and exceeds each requirement.

Paragraph	Description	Requirements	F01	F02
3.2.1.1	Input Voltage and	600 mA max,	531 mA for +15V	497 mA for +15V
	Current	+15V	64 mA for -15V	64 mA for -15V
		100 mA max, -		
		15V		
3.2.1.2	Operating	+1°C to +44°C	-16°C to +60°C***	-11°C to +52°C***
	Temperature			1
3.2.1.3	Start-up	All loads, -30°C	-30°C and +60°C in	-30°C and +60°C in
		and + 60 °C; in	vacuum	vacuum
*		vacuum		
3.2.1.4 &	Frequency Stability			
3.2.1.5	from 57.290344	± 200 kHz	+ 40 kHz, -15 kHz	+0 kHz, -22 kHz
	GHz at 22 °C			
3.2.1.6	RF Output Power	17 to 20 dBm	18.87 dBm	19.84 dBm
3.2.1.7	Output Power			
	Stability	< 1.5 dB	-0.9 dB, +0.35 dB	-0.69 dB, +0.16 dB
3.2.1.8	Load VSWR	2.01:1 or less	Verified	Verified
3.2.1.9	AM Noise	<-130 dBc/Hz @	-135 dBc/Hz @ 1 MHz	-136 dBc/Hz @ 1 MHz
		1 MHz	-140 dBc/Hz @ >8	-143 dBc/Hz @> 8
			MHz*	MHz*
3.2.1.10	FM Noise	<-100 dBc/Hz @	-102 dBc/Hz @ 1 MHz	-102 dBc/Hz @ 1 MHz
		1 MHz	-128 dBc/Hz @ > 8	-127 dBc/Hz @ > 8
			MHz*	MHz*
3.2.1.11	Spurious and Sub	<-90 dBc (No		
	Harmonic Signals	Spur in 110 MHz	Better than -92 dBc**	Better than -91 dBc**
		to 400 MHz)		
3.2.1.12	Harmonics	<30 dBc	Below -66 dBc	Below -61 dBc
3.2.1.14	Warm-up time	< 30 minutes	Verified	Verified
3.2.1.15	Grounding and			
	Shielding		By Design	By Design
3.2.1.16	Input Voltage			
	Protection		By Design	By Design
3.2.1.17	Reverse Polarity			
	Protection		By Design	By Design
Environmen	tal Testing			
M	licrophonics	AE-26633	TCXO Test	TCXO Test
Radi	ation Hardness	AE-26633	By Analysis	By Analysis
	EMI/RFI	AE-26633	Verified	Not Required
	Vibration	AE-26633	Qualification Level	Acceptance Level
The	rmal Vacuum	AE-26633	Yes	Yes
Weight		2.00 lbs	2.00 lbs	2.00 lbs.

^{*} AMSU-A System Required Frequency
** Spectrum Analyzer Noise Floor = -92 dBm

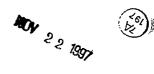
^{***} PLO Lockable in this range

TEST DATA SHEET 6 (Sheet 1 of 7) Functional Testing (Paragraph 4.2.1)

\$10 303744 oper 0170 AE-26758 para42.1.3 11.19.73 Test Setup Verified: Signature

Paragraph	4.2.1.3,	Functional	Testing:

Step	Test	Expected	Measured	Pass/Fai
-78	Current Time		Time	
4	Evacuate vacuum chamber and record pressure	<10 ⁻² torr	Pressure = $\frac{2.5 \times 10^{-3}}{10^{-3}}$ torr	Pacs
5	Thermal couple readings	TC1 = 22 ± 2 °C	TC1 = 22.5 °C	Pass
		TC2 - 22 ± 4 °C6	TC2 = 25.1 °C	N/A
		TC3 = 22 ± 6 °C6	TC3 = <u>27. 4</u> °C	NIA
6	Record Time and Calculate elapsed Times	→ 30 mins	Current Time O Elapsed Time mins	
7	Power-On time		Time	
	DRO L/A	<1V	DRO L/A = V	Pass
	PLO L/A	<1 V	PLO L/A = V	Pass
	Is PLO locked?	Yes	YesX No	Pass
8	Warm Up Time			
	Current Time		Time	
		5-to-10-minutes	ΔTime	
	PLO Frequency	57.290344 GHz ± 100 kHz	Freq _{PLO} = 57.290 GHz 3402	Pas Pas
	PLO Power	17 to 20 dBm	$P_{DRO} = \frac{\sqrt{9} \cdot 9^{17}}{100} dBm$	Pa,5
9	Input Voltage and Current			1 / 4,3
	VM1 Voltage	+15 ± 0.1 V	VM1 = 15.02 V	Pass
	VM2 Voltage	-15 ± 0.1 V	VM2 = -14,997 V	P. 35
	IM1 Current	600m A00 to 500 mA max	IM1 = <u>5/ウ</u> mA	Perss
	IM2 Current	100 mf80 to 120 mA max	IM2 = -6/ mA	Pass
	-VM3 Voltages	+12±0.1 V &	VM3=Vor	
	-VM4 Voltages	-12±0.1 V &	VM4=Vo	
	DRO L/A Voltage	< 1V	DRO L/A = V	Pais
	PLO L/A Voltage	< 1V	PLO L/A = / 23 _ V	Pass
13	RF Output Power and	17 to 20 dBm	$P_{PLO} = /9.97$ dBm	Pass
	Frequency	57.290344 GHz ± 100 kHz	FreqpLO = 57.250340 GHz 251	Pass
14	Frequency vs. Voltage	1C = 22+2C	_7C/= 25.5 °C.	Pass
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = - 15. 205 V	Pass
		-15.2 ± 0.05 V	-Voltage = -15, 2c2, V	P
Ì			Freq _{PLO} = 57. 270 340 270 GHz	A NI
			P _{PLO} = 19.87 dBm	NIA



MKR - 1.67dBmCL 30.0dB 20 CPT 10dB/ 57.29033GHz RL OdBm SO 303744 per 0170 AG-26750 pera 4.2.1.3 sto 13 m. glahl 11.14.17 22°C MKR 57. 29033 GHz -1.67dBm

CENTER 57.29031GHz SP *RBW 300kHz *VBW 300kHz

SPAN 10.00MHz SWP 50.0ms

			4.5 FINAL FUNCTIONAL TESTS
PARA	TEST	SPECIFICATION	+20°C
5.1	Electronic Tuning Range		
	Resistance w/fo+375Hz	0Ω to $100k\Omega$	Ω
	Resistance w/fo-375Hz	0Ω to $100k\Omega$	3.7K D
5.2	Frequency Settability		
	Frequency Setting	143.22586MHz±71.6Hz	143 225, 862 Hz
	Resistor Value	0 to 100k Ω	$1.5k$ Ω
5.3	Output Frequency		·
		fo±143.2Hz	143,225,865 Hz
5.4	Input Current		
	•	≤ 70 mA	<u>38.29</u> mA
5.5	RF Output Power		47. /
	RF Output Power	+15dBm±1dB	
5.6	Frequency and Output Power S	tability	
5.6.2	Frequency and Output Power vs	s Voltage	
step b	Frequency w/Vin=12.00Vdc	fo	/ <u>43725, 86</u> Hz
	Power w/Vin=12.00Vdc	+15dBm±1dB (Po)	<u>///. 7 //</u> dBm
	Frequency w/Vin=12.12Vdc	fo ± 28.6Hz	143225, 868 Hz
	Power w/Vin=12.12Vdc	Po ± 0.5dB	<u>14.85</u> dBm
	Frequency w/Vin=11.88Vdc	fo ± 28.6Hz	143775,859 Hz
	Power w/Vin=11.88Vdc	Po ± 0.5dB	<u>/Y.5</u> / dBm
5.6.4	Frequency Pulling		11/2 201/
step a	Freq. w/Load VSWR = 1:1 @ 0°		143,225,864 Hz 143,225,864 Hz
•	Freq. w/Load VSWR = 2:1 @ 0°		
step c	Freq. w/Load VSWR = 1:1 @ 180°		143,225,866 Hz
	Freq. w/Load VSWR = 1:1 @ 90°		143,225, 864 Hz
	Freq. w/Load VSWR = 1:1 @ 45°		143,225,866 Hz
	Max. ∆Freq. from step a to c	≤ 14.3Hz	Hz
5.7	Harmonics and Spurious		
	Harmonics	≤-70dBc	
	Spurious and Subharmonics	≤-85dBc	dBc

TESTED BY: 2 1/8/97

DATE: 1/8/97

CODE IDENT NO. DRAWING NO. **14844 A** 75

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FREQUENCY ELECTRONICS, INC.

SHEET 11

			4.5 FINAL
			FUNCTIONAL TESTS
PARA	<u>TEST</u>	SPECIFICATION	<u>+20°C</u>
5.8	Phase Noise @:		•
	100Hz	≤-80dBc	dBc
	1kHz	≤ -115dBc	<u>- /39</u> _dBc
	10kHz	≤ -120dB c	<u>— 144</u> dВс
	100kHz	≤ -125dBc	<u>-/43</u> dBc
	1MHz	≤ -13 0dBc	- 19 ² dBc
	Attach Plot		(\forall)
5.9	AM Noise @:		
	100Hz	≤ -105dBc	<u> /3/</u> dBc
	1kHz	≤ -125dBc	dBc
	10kHz	≤ -130dBc	- 150 dBc
	100kHz	≤ -1 35dBc	dBc
	1MHz	≤ -14 0dBc	-158 dBc
	Attach Plot		(V)
5.10	Short Term Stability		
		±0.1ppm	<u>0.006</u> ppm
5.6.1	Frequency vs Temperature		
	Frequency ∆ from -30°C to -1°C	±2005Hz	<u>873.7</u> Hz
	Frequency Δ from +42°C to +60°C	±2005Hz	<i>286.5</i> Hz
	Frequency ∆ from -1°C to +42°C	±143.2Hz	87.4 Hz
	Power ∆ from -1°C to +42°C	±1dB	<u></u>
	Power ∆ from -30°C to +60°C	+13dBm (min)	<u>/Y-/Y</u> dBm
5.6.3	Frequency and Power Hysteresis		
	Frequency Hysteresis @ +20°C	±0.3 ppm	ppm
	Power Hysteresis @ +20°C	±0.25dB	O.O /dB
	Attach Plot		(\forall)

TESTED BY: //// DATE: //9/97

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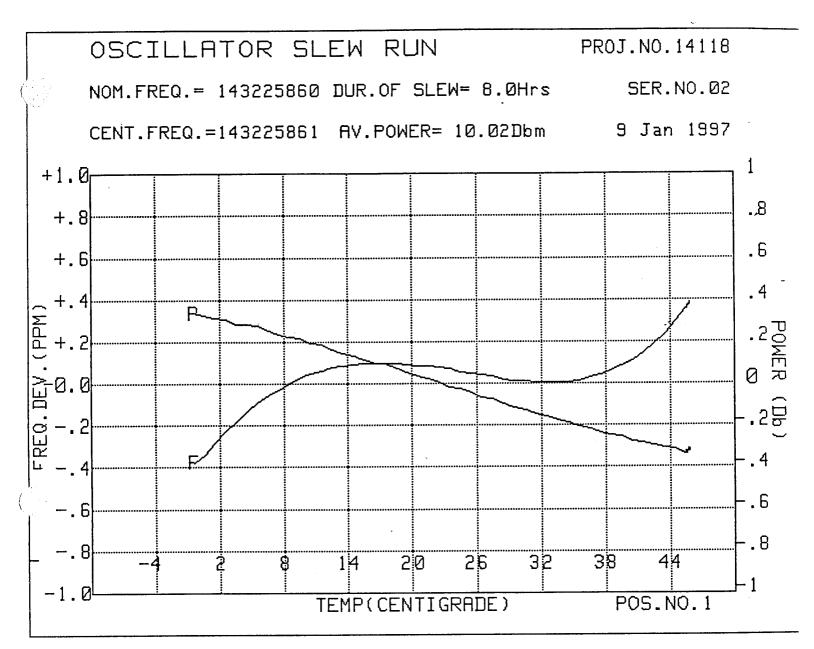
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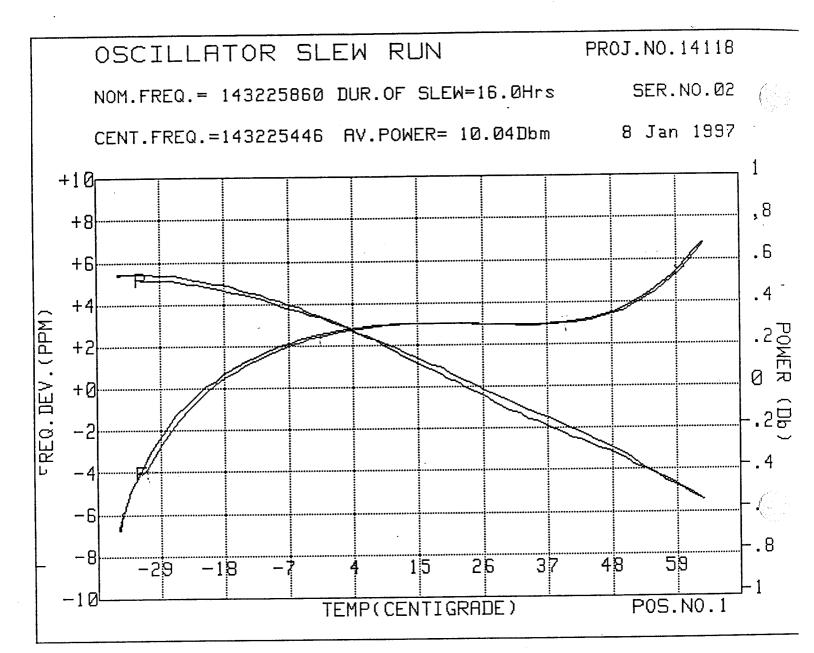
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FREQUENCY ELECTRONICS, INC.

SHEET 12



Final functional TEST PAR. 5.6.1 SIN 9707-48683



Final Functional TEST PAR. 5.6.3 SIN 9702-48683

TEST DATA SHEET 6 (Sheet 1 of 7) Functional Testing (Paragraph 4.2.1)

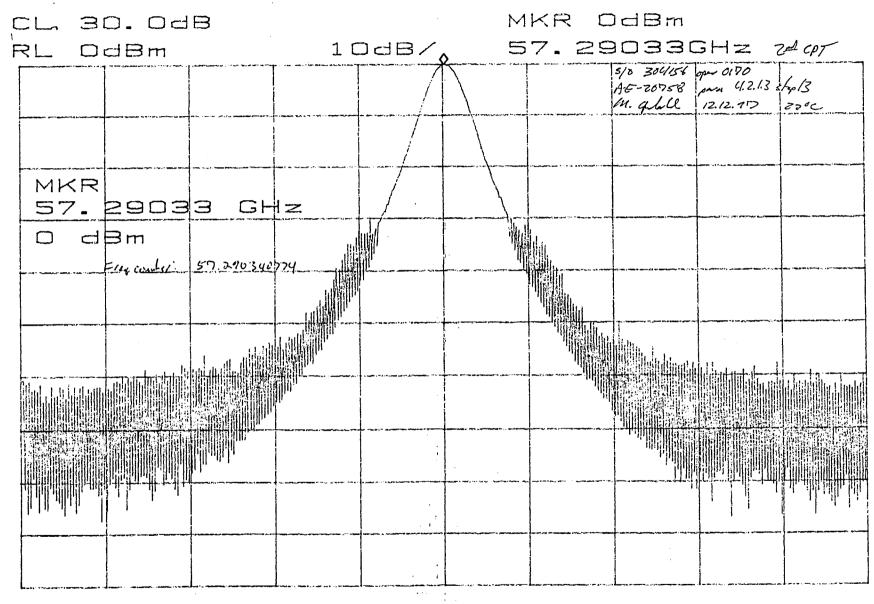
Test Setup Verified:

1.0100

Step	ph 4.2.1.3, Functional Testing: Test	Expected	Measured	· Pass/F
-18	Current Time		Time	
4	Evacuate vacuum chamber and record pressure	<10 ⁻² torr	Pressure =torr	
5	Thermal couple readings	TC1 = 22 ± 2 °C	TC1 = 30 4 °C	Pasi
		TC2 - 22 ± 4 °C 5	TC2 = <u>26.9</u> °C	16.167
		-TC3 = 22 ± 6 °C6	TC3 = 25. 1 °C	14,4
6	Record Time and Calculate		Current Time	
	elapsed Times	→ 30 mins	Elapsed Time mins	
7	Power On time		Time	
	DRO L/A	<1V	DRO L/A = <u>01/4</u> V	Pay
	PLO L/A	<1 V	PLO L/A = - iia V	Pars
	Is PLO locked?	Yes	Yes X	
			No	Pass
8	Warm Up Ting			
	Current Time		Time	
		5 to 10 minutes	A Time	
	PLO Frequency	57.290344 GHz ± 100 kHz	Freque ST LAUSH GHZ	Pers
	PLO Power	17 to 20 dBm	$P_{DRO} = 19.84 \text{ dBm}$	Pass
9	Input Voltage and Current	· t		1
	VM1 Voltage	+15 ± 0.1 V	$VM1 = \underline{(s'.c')} V$	Pess
	VM2 Voltage	-15 ± 0.1 V	$VM2 = -/5, C \downarrow V$	12,5
	IM1 Current	600m A00 to 500 mA max	IM1 = <u>401</u> mA	F= 55
	IM2 Current	100 mA80 to 120 mA max	$IM2 = \underline{6(.)} mA$	Pass
	-VM3 Voltage	+12±0.1 V &	VM3Vo	
	-VM4 Voltage	-12±0.1 V o	VM4=VO	
	DRO L/A Voltage	<1V	DRO L/A = .114 V	Pass
	PLO L/A Voltage	<1V	PLO L/A = V	Pass
13	RF Output Power and	17 to 20 dBm	$P_{PLO} = (1.84) dBm$	Pass
	Frequency	57.290344 GHz ± 100 kHz	FreqpLO = 57, 272 3 6H72 1	Pass
			TCI=-X-11-0C	* ***
14	Frequency vs. Voltage	1C1 222+2C	TCIE-A-T-CA	1 Pw>
14		+15.2±0.05 V	+Voltage = $+$ 15.20 V	
14	Frequency vs. Voltage			Pars Pass

P_{PLO} =

19.85 dBm



CENTER 57. 29031GHz SPAN 10. DOMHZ

*RBW 300KHz *VBW 300KHz SWP 50.0ms

			4.5 FINAL FUNCTIONAL TESTS
PARA	TEST	SPECIFICATION	+20°C
5.1	Electronic Tuning Range		
	Resistance w/fo+375Hz	0Ω to $100k\Omega$	<u> </u>
	Resistance w/fo-375Hz	0Ω to $100k\Omega$	3.9K D
5.2	Frequency Settability		
	Frequency Setting	143.22586MHz±71.6Hz	
	Resistor Value	0 to $100k\Omega$	1.8K 0
5.3	Output Frequency		•
		fo±143.2Hz	143,225,852 Hz
5.4	Input Current		
	-	≤ 70 mA	38.12mA
5.5	RF Output Power		_
	RF Output Power	+15dBm±1dB	
5.6	Frequency and Output Power St		
5.6.2	Frequency and Output Power vs	Voltage	
step b	•	fo .	143,225,852 Hz
	Power w/Vin=12.00Vdc	+15dBm±1dB (Po)	
	Frequency w/Vin=12.12Vdc	fo ± 28.6Hz	143 225, 853 Hz
	Power w/Vin=12.12Vdc	Po ± 0.5dB	/5.38 dBm
	Frequency w/Vin=11.88Vdc	fo ± 28.6Hz	143.225.850 Hz
E C 4	Power w/Vin=11.88Vdc	Po ± 0.5dB	
5.6.4	Freq. w/Load VSWR = 1:1 @ 0°		1.17.22 - 8-10
	Freq. w/Load VSWR = 1.1 @ 0°		143225,850 Hz
	Freq. w/Load VSWR = 1:1 @		143,225,848 Hz 143,225 850 Hz
Sicp C	180°		143,225 85° Hz
	Freq. w/Load VSWR = 1:1 @ 90°		143725 850 Hz
	Freq. w/Load VSWR = 1:1 @ 45°		143.225, 849 Hz
	Max. ΔFreq. from step a to c	≤ 14.3Hz	Hz
5.7	Harmonics and Spurious		
	Harmonics	≤-70dBc	<u> </u>
	Spurious and Subharmonics	≤ -85dBc	dBc

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SHEET 11

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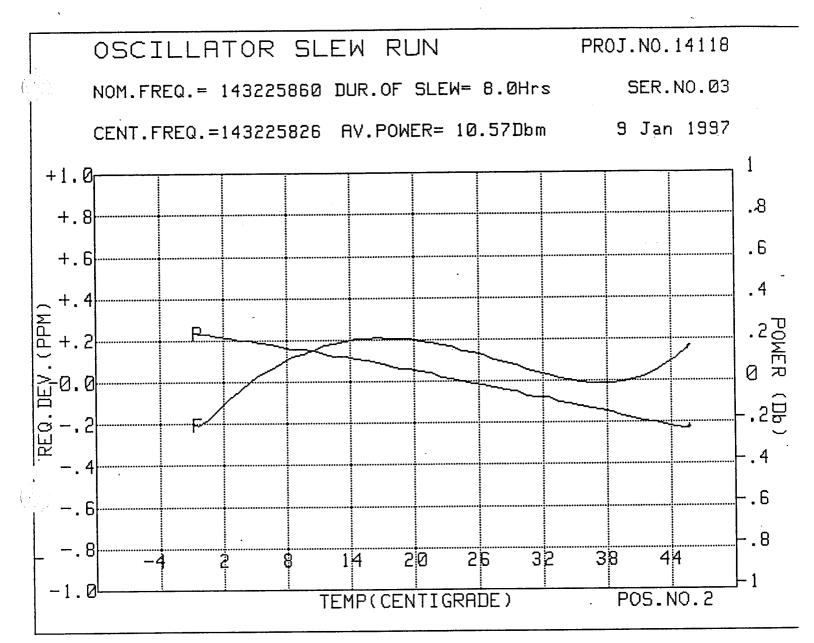
			4.5 FINAL
			FUNCTIONAL TESTS
PARA		SPECIFICATION	<u>+20°C</u>
5.8	Phase Noise @:		4.12
	100Hz	≤ - 80dBc	<u>/10</u> dBc
	1kHz	≤ -115 dBc	$\frac{-138}{\text{dBc}}$
	10kHz	≤ -1 20dBc	dBc
	100kHz	≤ -125d Bc	$\frac{-143}{\text{dBc}}$
	1MHz	≤ -130dBc	dBc
	Attach Plot		(V)
5.9	AM Noise @:		
	- 100Hz	≤-105dBc	$\frac{-/3/}{\text{dBc}}$
	1kHz	≤ -12 5dBc	$\frac{-140}{\text{dBc}}$
	10kHz	≤-130dBc	/50dBc
	100kHz	≤-135dBc	dBc
	1MHz	≤ -1 40dBc	-157 dBc
	Attach Plot		(\forall)
5.10	Short Term Stability		
		±0.1ppm	
5.6.1	Frequency vs Temperature		·
	Frequency ∆ from -30°C to -1°C	±2005Hz	Hz
•	Frequency Δ from +42°C to +60°C	±2005Hz	286.5 Hz
	Frequency ∆ from -1°C to +42°C	±143.2Hz	<u>57.3</u> Hz
	Power ∆ from -1°C to +42°C	±1dB	0.5 dB
	Power ∆ from -30°C to +60°C	+13dBm (min)	
5.6.3	Frequency and Power Hysteresis		
	Frequency Hysteresis @ +20°C	±0.3 ppm	O.O ppm
	Power Hysteresis @ +20°C	±0.25dB	0.0 dB
	Attach Plot		(v)

TESTED BY:	72
DATE:	1/9/97

CODE IDENT NO.	DRAWII	NG NO.	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	REV
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FREQUENCY ELECTRONICS, INC

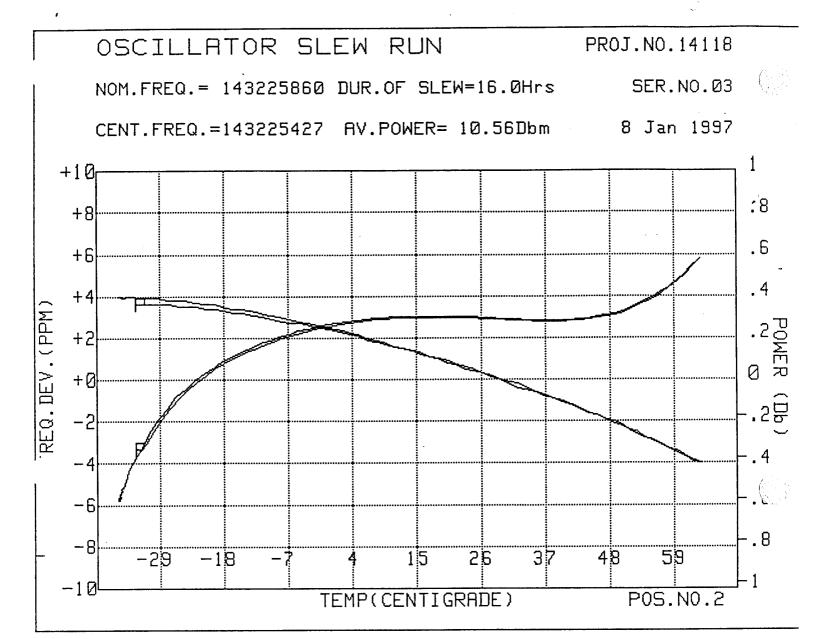
SHEET 12



Final functional Test.

PHN. 5.6.1

SNU 9702-48684



Final Functional Test PAN: 5.6.3 SIN 9702-48684

Channel 15 LO

GDO (P/N: 1336610-10, S/N: FM2)

AMSU-A GDO Data Sheet 1

Sequence Description: +20.5°C Comp Test Date: 4/14/47 Millitech Part Number 9050160001; Serial Number FM2 Operator: 05X QC Verify Set-up: Aerojet Part Number 1336610-10

Output Power direct: 15.98 dBm; Output Power in test set-up: 13.47 dBm Output Power Delta: 2.51 dB

Unit Temperature: 205 °C; Vacuum level: 20 mTorr В.

Baseline Measurements

C. Bustine	15.0	14.25	15.75	min limit	max limit	Pass/Faii
Vb (volts)	15.0			05	+.05	19655
Vb meas. (Volts)	+/5.00	4111.75	15.75	05		
ib (mA)	179	179	179	-	230	1453
	26 3 6 2	58.787	88.987		-	
fo (GHz)	38.987		+13:47			
Po (dBm, meas)	+13,47	1/3,47		10	17	Price
Po (dBm, corr)	+15.98	115.98	+15.98	13	17	Pass

Frequency Pulling, Vb = 15.0 volts; measured /5.00 V

υ.	Frequency					minilimit	max limit	Pass/Fail	
Fref (GHz)	1 00	.487				+ 5 MHz	F657	1
Fmax	(GHz)	. 88	,988		+/,1142			12:55	1
Fmin	(GHz)	88	.987	- ∆ (MHz)	0.2142	-5 MHz		7-435	1

E.	Power Fulling				min limit	max limit	Pass/Fail	۱
Pref	(dBm)	-7.18				+0.2dB	Sec. 55	ľ
Pma	x (dBm)	-7,06	+∆ (dB)	+0,12			1265	1
ļ	(dBm)	-7.36	- Δ (dB)	-0.18	-0.2 dB		7.433	1

Turn-on current

14 (valea)	15.0	min limit	max limit	Pass/Fail
Vb (voits)	+15.00			F6:55
Measured Vb	120		345	Po: 53
Turn-on current (mA)	1/9			
time to peak (ms)	10.8		***	
time to settle (ms)	10:8			

Unit Temperature: 21 °C G.

Vacuum level: <u>2 c</u>mTorr

DATA SHEET ACCEPT/REJECT

, LOCO	
Reject	
Test Failure Report No.	
Report Date	
	Reject Test Failure Report No.

SIZE	CAGE COD 8V456		DWG. NO. TP501600-2	
SCALE		REV.	LTR. A00	29 O

AMSU-A GDO Data Sheet 1

Sequence Description Millitech Part Number Aerojet Part Number 1	: <u>-2°C C</u> 905016000 1336610-10	<u>οмρι</u> 1; Seri	e hews al Numb	in Tost per <u>FM2</u>	Date Ope QC	e: <u>²//</u> rator: Verify Se	/2:/97 _ 4/ USY it-up:(/22/97 MTC AA
A. Output Power direct: 15.98 dBm; Output Power in test set-up: 13.47 dBm Output Power Delta: 3.51 dB								
B. Unit Temperature: -2 °C; Vacuum level: 15 mTorr								
C. Baseline Meas	urements			·	,		,	·
Vb (volts)	15.0	1.	4.25	15.75	m	in limit	max limit	Pass/Fail
Vb meas. (Volts)	+15 00		1,25	+15.75		05	+.05	Perss
lb (mA)	173		73	173			230	Pa45
fo (GHz)	88,992		1992	85,992	<u> </u>			
Po (dBm, meas)	+13,34		,34	+13.34		-		
Po (dBm, corr)	+ 15.85	+15	(85	+15.85		13	17	Pass
D. Frequency Pull		5.0 vo	lts; mea	sured <u>/5,00</u>				T. Basa (5-1)
Fref (GHz)	58,992				m	in limit	max limit	Pass/Fail
Fmax (GHz)	४५, ५५५		(MHz)	+2		-	+ 5 MHz	0257
Fmin (GHz)	28,489	- Δ	(MHz)	- 3		MHz		P5.45
E. Power Pulling								
Pref (dBm)	-6148				m	n limit	max limit	Pass/Fail
Pmax (dBm)	-4.32	+4	(dB)	+0.(4			+0.2dB	Pasi
Pmin (dBm)	-6.65	- Δ	(dB)	-0.17	-C).2 dB		Fa55
F. Turn-on curren								
Vb (volts)	15.		min lii	mit max li	mit	Pass/F		
Measured Vb	+15:00)	<u> </u>			Pass		
Turn-on current (mA)	173			345		Page	,	
time to peak (ms)	11,0)						
time to settle (ms)	/1,0)		-				
G Unit Temperati	ure.] °(:	Va	cuum level:	15	mTorr		

DATA SHEET ACCEPT/REJEC	n	ΔΤΔ	SHEET	ACCEPT	/REJEC
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DATA SHEET	ACCEP 1/		
Accept	(ITC)	Reject	
(MA)		Test Failure Report No.	
	9	Report Date	

SIZE	CAGE CODE 8V456	DWG. NO.	P501600-2
SCALE		EV. LTR.	SHEET

AMSU-A GDO Data Sheet 1

Sèquence Description:	+413°C	Comp Tes		4/14/22-4/19/	97 - 4/20/97
Millitech Part Number 9 Aerojet Part Number 13	050160001;	Serial Number	FM 2 Opera	erify Set-up:	MTC A4 QA

A. Output Power direct: 15.99 dBm; Output Power in test set-up: 13.47 dBm
Output Power Delta: 2151 dB

B. Unit Temperature: 445 °C; Vacuum level: 18 mTorr

C. Baseline Measurements

C. Baseline in	15.0	14.25	15.75	min limit	max limit	Pass/Fail
Vb (volts)		14.23	+15.75	05	+.05	P4 45
Vb meas. (Volts)	+15:00	7/4525	1/3/1/		230	P455
Ib (mA)	183	185	185	 		7 - 7 /
fo (GHz)	88,980	84,940	88,980			
Po (dBm, meas)	+ 13.36	+13.36	+/3.34	13	17	Ass
Po (dBm, corr)	1+15.87	+15,87	1+15.81	13	1/	1995

D. Frequency Pulling, Vb = 15.0 volts; measured 15.00 V

D. Troquerity			***************************************			Pass/Fail
Fref (GHz)	88,980	4		min limit	max limit	Pass/Fall
Fmax (GHz)	88,983	+Δ (MHz)	43		+ 5 MHz	1095
Fmin (GHz)	88977	- Δ (MHz)	- 3	-5 MHz		Pass

E. Power Pulling

				***************************************			Dana/Enil	1
	Pref (dBm)	-6153			min limit	max limit	Pass/Fail	1
+	Pmax (dBm)	-6135	+∆ (dB)	10.18		+0.2dB	84 33	1
٠.	Pmin (dBm)	-6:70	1 (10)	-0.17	-0.2 dB		Part 5	1
	F	1 - 4 1 1		1				_

F. Turn-on current

r. fullion danone				
Vb (volts).	15.0	min limit	max limit	Pass/Fail
Measured Vb	+15.00			10.93
Turn-on current (mA)	185	·	345	6037
time to peak (ms)	10.6			
time to settle (ms)	10,6			

G. Unit Temperature: $\frac{\cancel{443}}{\cancel{0}}$ °C Vacuum level: $\frac{\cancel{18}}{\cancel{0}}$ mTorr

DATA SHEET ACCEPT/REJECT

Accept	(MIC)	Reject	
<u> </u>		Test Failure Report I	Vo.
		Report Da	ate

SIZE	CAGE CODE 8V456	DWG. NO. TP5016	500-2
SCALE	RI	V. LTR. A00	SHEET/ 29 OF

AMSU-A GDO Data Calculation Sheet 8

Sequence Description: Frequency Accuracy & Stability Calculations Date: 4/23/97

Millitech Part Number 9050160001; Serial Number FM2 Operator: 0754

Aerojet Part Number 1336610-10

A. Frequency Accuracy from Thermal Vacuum, CPT and Final LPT Data

	Parameter, Vb=15.0 volts	Data Sheet, Section	Date, mm/dd/yy	Measurement
1	+Δ, pulling, +20.5°C, MHz	1, D	4/14/97	+1
2	- Δ, pulling, + 20.5°C, MHz	1, D	4/16/97	0
3	+Δ,pulling, +43°C	1, D	4/19197	+ 3
4	-Δ, pulling, +43°C	1, D	4/19/97	-3
5	+Δ, pulling, -2°C	1, D	41/21/97	+ 2
6	-Δ, pulling; -2°C	1, D	4/21/57	_ 3
7	Set point w / max Hysteresis, GHz	6, E	4/11/97	88,984
8	Set point w / min Hysteresis, GHz	6, E	4/11/97	88,981
9	(Maximum of lines 1, 3, and 5) +7			88,987 GHz
10	(Maximum of lines 2, 4, and 6) +8	<u> </u>		88,918 GHz

B. Frequency Accuracy Result

	Result	min ·	max limit	Pass/Fail
A9, GHz	58,987		89.030	Paga
A10, GHz	881978	88.970		P257

CONTINUED, GO TO NEXT PAGE

SIZE	CAGE COD 8V456		DWG. NO. TP501600-2	2
SCALE		REV.	LTR. AOO	SHEET 36 OF 41

AMSU-A GDO Data Calculation Sheet 8, continued

Sequence Description: Frequency Accuracy & Stability Calculations Date: 4/3/97

Millitech Part Number 9050160001; Serial Number FM2 Operator: CSY

Aerojet Part Number 1336610-10

C. Frequency Stability from Comprehensive Performance Test Data

	Bias Voltage, volts	Data Sheet, Section	Date, mm/dd/yy	Tcase, °C	Measurement, GHz
	14.25	1, C	4/16/97	+20.5	88,987
2	15.0	1, C	4/16/97	+20.5	88,987
3	15.75	1, C	4/16/97	+ 20.5	88,987
4	14.25	1, C	4/2/197	-2	58,992
5	15.0	1, C	4/2/197	-2	88.992
6	15.75	1, C	4/21/97	-2	88.992
7	14.25	1, C	4/19/97	+,43	88.980
8	15.0	1, C	4/19/97	+43	FF,980
9	15.75	1, C	4/19/91	+43	A8,980
10	((Maximum of 1 through 9) -C2)		* 1000 MHz		+5 MHz
11	((Minimum of 1 thr		* 1000 MH:	z	-7 MHz

D. Frequency Stability Result

	Result	min limit	max limit	Pass/Fail
C10, MHz	+5		+ 50	A1.55
C11, MHz	- 7	-50		Pa45

DATA SHEET ACCEPT/REJECT

DATA SHEET ACCEPT		
Accept (30)	Reject	
(APP)	Test Failure Report No.	
	Report Date	

SIZE	CAGE COD 8V456		DWG. NO. TP501600-2	2
SCALE		REV.	A00	37 OF 41

FREQUENCY STABILITY OF SAW FILTERS

Channel No.	11	12	13	14	
Specification (+/-MHz)	0.9	0.9	0.2	0.2	
Short-Term Measured (MHz)	+0.55, -0.63	+0.23, -0.19	+0.01, -0.09	+0.07, -0.00	
Long-Term By Analysis (+/-MHz)	+0.02	+0.02	+0.02	+0.02	
Total	+0.57, -0.63	+0.25, -0.09	+0.03, -0.09	+0.09, -0.00	

Note: Additional +/-0.1 MHz frequency stability reserved for safety margin for channels 11-14.

i i			

BANDPASS CHARACTERISTICS FOR IF FILTERS AND SAW FILTERS

E CONTRACTOR OF THE CONTRACTOR		<u></u>
·		

3 dB BANDWIDTH OF IF FILTERS

Channel No.	1	2	3	4	5	6	7	8	9	10	15
Specification (MHz)	135	90	90	200	170	200	200	165	165	78	6000
3 dB bandwidth (MHz) *	127	82	82	192	170	192	192	157	157	78	1020
f _L - f _H (MHz)	8-135	8-90	8-90	8-200	30-200	8-200	8-200	8-165	8-165	178-256	490-1510
Measured (MHz)											
3 dB bandwidth (MHz)	125.48	80.06	80.24	189.74	167.76	190.21	190.24	154.84	154.90	76.49	998.03
f _L - f _H (MHz)	8.64- 134.12	9.00- 89.06	9.16- 89.40	9.21- 198.95	31.25- 199.01	9.21- 199.42	9.22- 199.46	9.12- 163.96	9.05- 163.95	178.92- 255.41	490.54- 1488.57

^{*} Actual specifications for IF filters.

3 dB BANDWIDTH FOR SAW FILTERS

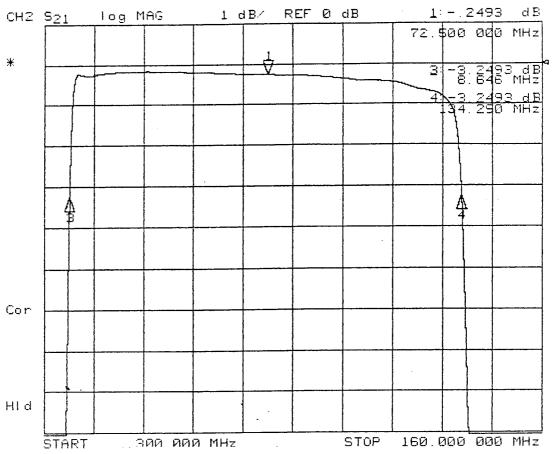
Channel No.	11	12	13	14
Specification				
3 dB Bandwidth (MHz)	72	32	16	6
f _{L1} - f _{H1} (MHz)	256.2-292.2	292.2-308.2	308.2-316.2	316.2-319.2
f_{L2} - f_{H2} (MHz)	352.2-388.2	336.2-352.2	328.2-336.2	325.2-328.2
<u>Measured</u>				
3 dB Bandwidth (MHz)	69.88	30.89	15.71	5.87
f _{L1} - f _{H1} (MHz)	256.71-291.51	292.62-308.04	308.29-316.12	316.26-319.18
f _{L2} - f _{H2} (MHz)	352.61-387.69	336.47-351.94	328.19-336.07	325.29-328.24

Channel 1 Bandpass Filter

IF Filter (S/N: 1331559-6, S/N: P232-003)

 ADDENDIVE	ACCEPTANG	CE TEST DEDOS	.	
APPENDIX F	ACCEPTANC	CE TEST REPOR	<u>L</u>	
BANDPASS FILTER MODEL HL7 AEROJET 1331559-6 REV.	72.5-125-10SS 	61 S/N <u>P232-</u> C	XX3	
3.0 dB EANDWIDTH ACCEPTANCE TEST PROCEDU 63-0005-02 PARA 4.5.3	RE	-10°C	+15°C	+40°C
{7} UPPER 3.0 dB BANDEDGE		1 <u>34.29</u> MHz (133.0-135.0)	(134,12 Mhz (133.0-135.0)	13 <u>3.96</u> MHz (133.0-135.0)
{8} LOWER 3.0 dB BANDEDGE		<u>%.65</u> MHz (8.0-10.0)	<u>8.64</u> Mhz (8.0-10.0)	8.62 <u>MHz</u> (8.0-10.0)
(9) 3.0 dB RELATIVE BANDWIDT		1 <u>25.64 </u> MHz (123.0-127.0)	1 <u>25.48</u> Mhz (123.0-127.0)	12 <u>5.34</u> MHz (123.0-127.0)
{10} ADD {7} AND {8} ÷ 2 =		71.47 MHz (72.5 NOM)	71.3% MHz (72.5 NOM)	7 <u>1.29</u> Mhz (72.5 NOM)
{10a} RECORD MEASURED TEM		- <u>IZ.7</u> °C (-15.0 TO -10.0)		+ <u>42.8 °</u> c (40.0 TO 45.0)
(6) ATTACH TRANSMISSION LO PERFORMANCE X-Y PLOT	SS	<u>(</u> 1)	(√)	(1)
PASSBAND RIPPLE ACCEPTANCE TEST PROCEDUR 63-0005-02 PARA 4.5.4	RE	-10°C	+15°C	+40°C
{11a} MIN INSERTION LOSS FR	EQ	33.44 MHz	32.64 Mhz	32.24 MHz
MIN INSERTION LOSS PE	RFORMANCE	- 0.16 dB	- <u>0.16</u> dB	- <u>0.17</u> dB
{11b} 75% BW LOWER BANDED	GE FREQ	10.22 MHz	1 <u>0.18</u> Mhz	10.14 MHz
75% BW LOWER BANDED	GE I.L. PERF	- <u>041</u> dB	- <u>ОНЗ</u> dВ	- <u>0.45</u> dB
{11c} 75% BW UPPER BANDEDO	GE FREQ	1 <u>03.97</u> MHz	1 <u>03.93</u> Mhz	1 <u>03.89</u> MHz
75% BW UPPER BANDED	GE I.L. PERF	- <u>0.41</u> dB	- <u>0.43</u> dB	- <u>0.46</u> dB
{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})		<u>0.25</u> dB	<u>0.27</u> dB	<u>0.29 dB</u>
{11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})		0.25 dB	<u>0.27</u> dB	<u>0.29</u> dB

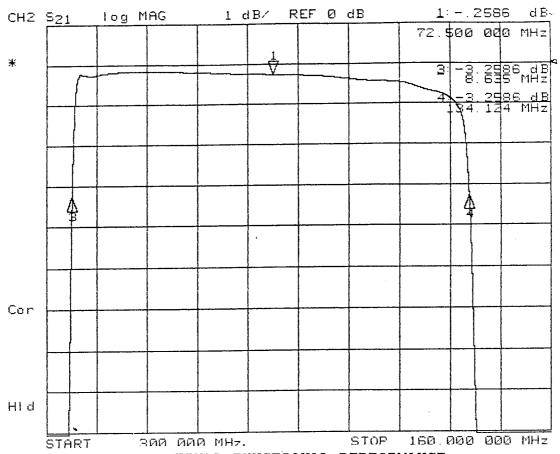
Prepared in accordance with MIL-STD-100				
CONTRACT NO.	SIZE	CAGE CODE	DWG. NO.	REV.
	Α	57032	63-0005-02	J
DADEN-ANTHONY ASSOCIATES INC.	FILE. AC	AD/63/0502APFJ.DOC	SHEET	12



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P232-003 -10C DATA

OPR: R. HOGGATT DATE 11 25 46 MARKER PARAMETERS

MARKER 1	16 250000 MHz OFF	72.500000 MHz 2493 dB
MARKER 2	128.750000 MHz OFF	71.468471 MHz OFF
MARKER 3	25.625000 MHz OFF	8.646337 MHz -3.2493 dB
MARKER 4	119.375000 MHz OFF	134.290606 MHz -3.2493 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.4258Ø2 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB 8FF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P232-003 +15C DATA

OPR: R. HOGGATT DATE 11 25 94 Chunnel 2

MARKER 1	16.250000 MHz OFF	72.500000 MHz 2586 dB
MARKER 2	128.750000 MHz OFF ·	71.379748 MHz OFF
MARKER 3	25.625000 MHz OFF	8.635391 MHz -3.2586 dB
MARKER 4	119.375000 MHz OFF	134.124106 MHz -3.2586 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH	OFF CONTINUOUS OFF	OFF CONTINUOUS OFF

-14 dB

-3 dB

OFF

OFF

TARGET VALUE

MARKER TRACKING

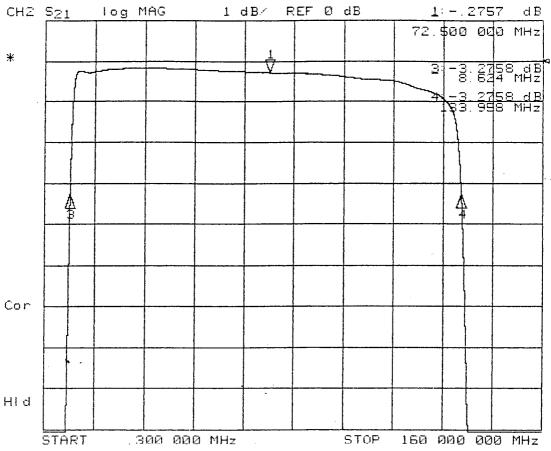
MARKER WIDTH VALUE

-3 dB

-3 dB

OFF

OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P232-003

+40C DATA

OPR: R. HOGGATT DATE 11 75 4 MARKER PARAMETERS

MARKER 1	16.250000 MHz OFF	72.500000 MHz 2757 dB
MARKER 2	128.750000 MHz OFF	71.291275 MHz OFF
MARKER 3	25.625000 MHz OFF	8.624010 MHz ~3.2758 dB
MARKER 4 .	119.375000 MHz OFF	133.958541 MHz -3.2758 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
PLACEMENT MARKER SEARCH TARGET VALUE	OFF CONTINUOUS OFF -14 dB -8 dB OFF	OFF CONTINUOUS OFF -3 dB -5 dB OFF
MARKER TRACKING	OFF	OFF

APPENDIX F

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL72.5-125-10SS1 S/N PZ32-CO3 AEROJET 1331559-6 REV. C

PASSBAND RIPPLE (CON'T)

{11f} RECORD PASS/FAIL (0	.5 dB MAX)
---------------------------	------------





(PASS)FAIL

(11g) ATTACH PASSBAND RIPPLE

PERFORMANCE X-Y PLOT(S)

✓_(√)

OUT-OF-BAND REJECTION

ACCEPTANCE TEST PROCEDURE

-10°C

+15°C

+40°C

63-0005-02 PARA 4.5.5

Fc=72.5 MHz.

REF {5A} FOR INSERTION LOSS @ Fc

{12} WORST CASE REJECTION FROM 0.300 MHz TO 1.0 MHz

>100 dB (40.0 dB MIN)

>100 dB (40.0 dB MIN)

>100 dB (40.0 dB MIN)

{13a} WORST CASE REJECTION FROM 153.75 MHz TO 1000.0 MHz

-65.2 dB (40.0 dB MIN) -66.0 dB (40.0 dB MIN) -66.9 dB (40.0 dB MIN)

{13c} RECORD MEASURED TEMPERATURE

-13.0 ℃ (-15.0 TO -10.0) (12.5 TO 17.5)

+<u>15.3</u> °C

+42.8°C (40.0 TO 45.0)

{14} ATTACH REJECTION PERFORMANCE X-Y PLOT(S)

TEST PERFORMED BY 12. HOGGATT DATE 11/25/96

NOTE IF TEST WITNESSED BY AESD: _____ GSI:

) DOT WITNESSED THISTIME

***** END OF FUNCTIONAL PERFORMANCE TEST ****

OUTLINE AND MOUNTING DIMENSIONS VERIFICATION

{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT

DIMENSION AND TOLERANCE

ACTUAL **MEASUREMENT**

OVER ALL LENGTH

 $3.50 \pm .03$

3.500

MOUNTING HOLE CENTER

 $0.125 \pm .010$

.124

BETWEEN UPPER MOUNTING HOLES

3.250

3.248

BETWEEN LOWER MOUNTING HOLES

3.250

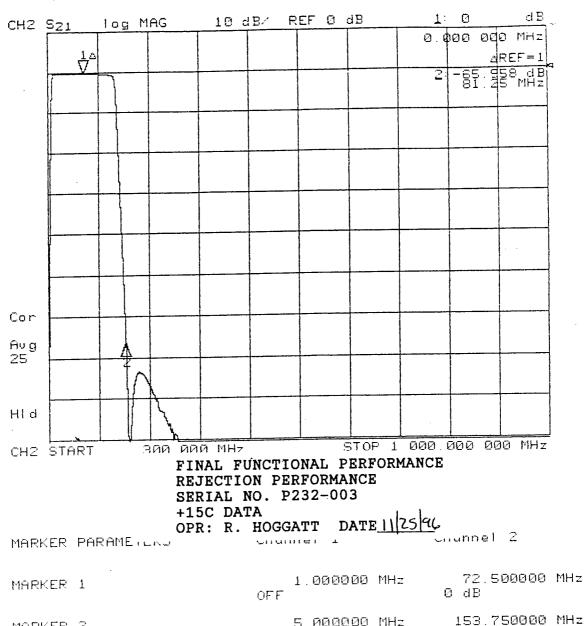
3,249

Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG 63-0	i. NO. 005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APFJ.DOC		SHEET	13

CMZ 521	log MAG 10	dB/ REF Ø d	Б	1: 0	d B
1.0			6	a. q aa ada	} }
J V					EF=1
ij				2: -65 16	MHŽ
-					
Cor					
Aug					
25	7				
HIa					
CH2 START		ST	OP 1 000	1 000 000	MHz
		UNCTIONAL PE		CE	
		ON PERFORMAN			
	SERIAL	NO. P232-003	1		
				ıı	
MARKER PAR	-10C DA			<u>L</u> Channel 2	2
	-10C DA	ATA HOGGATT DA	TE 11 25 9		
MARKER PAR	-10C DA		TE 11 25 9	լ և Channel 2 72.500 0 dB	
	-10C DA	ATA HOGGATT DA 1.000000 OFF 5.000000	. TE 25 9 0 MHz 0 MHz	72.500 0 dB 153.750	0000 MHz
MARKER 1	-10C DA	ATA HOGGATT DA 1.000000	. TE 25 9 0 MHz 0 MHz	72.500 0 dB	0000 MHz
MARKER 1	-10C DA	ATA HOGGATT DA 1.000000 OFF 5.000000	.TE <u>ll 25 9</u> 0 MHz 0 MHz 0 MHz	72.500 0 dB 153.750	0000 MHz 0000 MHz 18
MARKER 1 MARKER 2 MARKER 3	-10C DA	1.000000 0FF 5.000000 0FF 5.000000 0FF	ATE	72.500 0 dB 153.750 -65.165 d 153.750 OFF	0000 MHz 0000 MHz 18
MARKER 1	-10C DA	1.000000 0FF 5.000000 0FF 5.000000 0FF	ATE	72.500 0 dB 153.750 -65.165 d	0000 MHz 0000 MHz 18
MARKER 1 MARKER 2 MARKER 3 MARKER 4	-10C DA	1.000000 OFF 5.000000 OFF 5.000000 OFF 6.000000	TE	72.500 0 dB 153.750 -65.165 d 153.750 OFF 1000.000 OFF	0000 MHz 0000 MHz 1B 0000 MHz
MARKER 1 MARKER 2 MARKER 3 MARKER 4	-10C DA OPR: R	1.000000 OFF 5.000000 OFF 5.000000 OFF	TE	72.500 0 dB 153.750 -65.165 d 153.750 OFF 1000.000	0000 MHz 0000 MHz 1B 0000 MHz
MARKER 1 MARKER 2 MARKER 3 MARKER 4	-10C DA OPR: R	1.000000 OFF 5.000000 OFF 5.000000 OFF 6.000000	TE	72.500 0 dB 153.750 -65.165 d 153.750 OFF 1000.000 OFF	0000 MHz 0000 MHz 1B 0000 MHz
MARKER 1 MARKER 2 MARKER 3 MARKER 4 MKR STIMUL REFERENCE PLACEMENT	-10C DA OPR: R.	ATA HOGGATT DA 1.000000 OFF 5.000000 OFF 5.000000 OFF 0.000000 0 dB OFF CONTINUOUS	TE	72.500 0 dB 153.750 -65.165 d 153.750 OFF 1000.000 OFF 0.000	0000 MHz 0000 MHz 18 0000 MHz 0000 MHz
MARKER 1 MARKER 2 MARKER 3 MARKER 4 MKR STIMUL REFERENCE PLACEMENT MARKER SEF	-10C DA OPR: R. PAMEILING US OFFSET MARKER PRCH	ATA HOGGATT DA 1.000000 OFF 5.000000 OFF 5.000000 OFF 0.000000 OFF CONTINUOUS OFF -3 dB	TE	72.500 0 dB 153.750 -65.165 d 153.750 0FF 1000.000 0FF 0 dB MARKER 1 CONTINUOL OFF -3 dB	0000 MHz 0000 MHz 18 0000 MHz 0000 MHz
MARKER 1 MARKER 2 MARKER 3 MARKER 4 MKR STIMUL REFERENCE PLACEMENT MARKER SER	-10C DA OPR: R. PAMETERS LUS OFFSET MARKER PRCH LUE OTH VALUE	ATA HOGGATT DA 1.000000 OFF 5.000000 OFF 5.000000 OFF 0.000000 OFF 0.000000 OFF 0.000000	TE	72.500 0 dB 153.750 -65.165 d 153.750 OFF 1000.000 OFF 0.000 MARKER 1 CONTINUOL	0000 MHz 1000 MHz 18 1000 MHz 1000 MHz

1.0



MARKER 1	1.000000 MHZ OFF	72.500000 NA2 0 dB
MARKER 2	5.000000 MHz OFF	153.750000 MHz -65.958 dB
MARKER 3	5.000000 MHz OFF	153.750000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz O dB	0,000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF

OFF

MARKER TRACKING

OFF

CH2	S ₂₁	log M	1AG	10 0	B/ F	REF Ø	dB	1:	0	dВ
								0.6	00 00	de MHz
	∇									REF=1
								2:	-66.8 81.2	94 dB 5 MHz
				,						
Cor	 									
Avg 25		<u>_</u>								
	.									
HId			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				·			
CH2	START	. A	മെ മമ						900 00	00 MHz
FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P232-003 +40C DATA OPR: R. HOGGATT DATE 11 25 96										
MARK	MARKER PARAME									

Junnel 2 MARKER PARAMETERS SHOWER A

MARKER 1	1.00000 MHz OFF	72.500000 MHz 0 dB
MARKER 2	5,000000 MHz OFF	153.750000 MHz -66.894 dB
MARKER 3	5.000000 MHz OFF	153.750000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB	MARKER 1 CONTINUOUS OFF -3 dB -3 dB

OFF

OFF

MARKER TRACKING

OFF

OFF

Δ	P	P	E	N	D	IX	F
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ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL72.5-125-10SS1 S/N_P23Z-CO3 AEROJET 1331559-6 REV.

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. + 22.3 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

____(\dagger{\psi})

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-108.0 dB	F11	(*) 80.0	MHz	-0.30 dB
F2	1.0	MHz	<u>-96.6</u> dB	F12	(*) 100.0	MHz	-0.41 dB
F3	5.0	MHz	<u>- 30.5</u> dB	F13	120.0	MHz	<u>-0.64</u> dB
F4	7.5	MHz	- 9.41 dB	F14	130.0	MHz	- 1.03 dB
F5	10.0	MHz	<u>- 0.86</u> dB	F15	135.0	MHz	- 5.06 dB
F6	15.0	MHz	<u>-0.29</u> dB	F16	140.0	MHz	- <u>70.9</u> dB
F7	25.0	MHz	-0.20 dB	F17	150.0	MHz	- <u>52.5</u> dB
F8	(*) 45.0	MHz	-0.18 dB	F18	200.0	MHz	- <u>76.6</u> dB
F9	(*) 65.0	MHz	<u>- 0.25</u> dB	F19	500.0	MHz	-106.2 dB
F10	72.5	MHz	- O.29 dB	F20	1000.0	MHz	- <u>101.0</u> dB
TEST	PERFORM	ED BY:	12. HOGGATT	DATE	1125 96	DA 5	i
NOTE IF	TEST WITN	IESSED	BY AESD	GSI		TOCL	WITNESSED

****	END	OF	RANI	22	HAP	ACT	EDIC.	TICC	TEST	****

DOT WITNESSED THISTIME

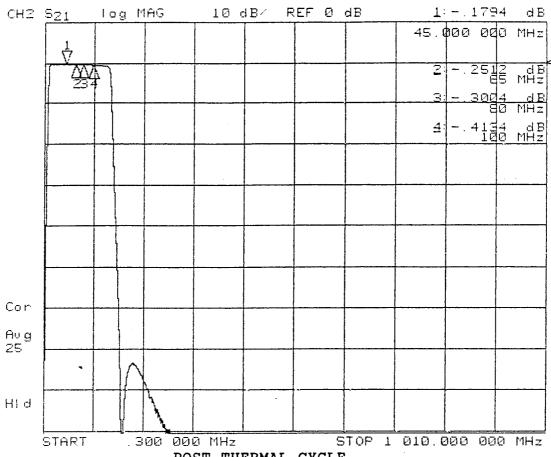
FUNCTIONAL PERFORMANCE TEST

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX F PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

Prepared in accordance with MIL-STD-100			•	
CONTRACT NO	SIZE	CAGE CODE	DWG. NO.	REV.
	Α	57032	63-0005-02	J
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APFJ.DOC	SHEET	10



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P232-003

AMBIENT

	AM	RIEMI			1 1	
	OP:	R: R.	HOGGATT	DATE II	125196	
MARKER PA			Silviniai		Countrel	2

MARKER 1	16.250000 MHz OFF	45.000000 MHz 1794 dB
MARKER 2	128.750000 MHz OFF	65.000000 MHz 2512 dB
MARKER 3	25.625000 MHz OFF	80.000000 MHz 3004 dB
MARKER 4	119.375000 MHz OFF	100.000000 MHz 4134 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -14 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF

Channel 2 Bandpass Filter

IF Filter (S/N: 1331559-3, S/N: P229-012)

APPENDIX C

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL50-80-10SS1 S/N PZZ9-012 AEROJET 1331559-3 REV.

3.0 dB BANDWIDTH

ACCEPTANCE TEST PROCEDURE	-10°C	+15°C	+40°C
63-0005-02 PARA 4.5.3		100	-40- C

00 0000-021 ARA 4.5.5			
{7} UPPER 3.0 dB BANDEDGE	89.21 MHz (88.0-90.0)	89.06 Mhz (88.0-90.0)	<u>%8.92</u> MHz (88.0-90.0)
{8} LOWER 3.0 dB BANDEDGE	9.01 MHz (8.0-10.0)	<u>9.00</u> Mhz (8.0-10.0)	8.99 MHz (8.0-10.0)
(9) 3.0 dB RELATIVE BANDWIDTH	<u>86.20</u> MHz (78.0-82.0)	<u>80.0</u> Mhz (78.0-82.0)	7 <u>9.93</u> MHz (78.0-82.0)
{10} ADD {7} AND {8} ÷ 2 =	<u>49.11</u> мHz (50.0 NOM)	<u>49.03</u> мнz (50.0 NOM)	4 <u>8.96</u> Mhz (50.0 NOM)
110al RECORD MEASURED TEMPERATURE	17 6 00	. 14 2 -	

(10a) RECORD MEASURED TEMPERATURE	-12.9 °C	+16.3 ℃	+43.7°C
	(-15.0 TO -10.0)		

			•	,
(6) ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	<u>√</u> (√)	(√)		<u> </u>

PASSBAND RIPPLE

ACCEPTANCE TEST PROCEDURE	-10°C	+15°C	+40°C
63-0005-02 PARA 4.5.4		. 10 0	T40°C

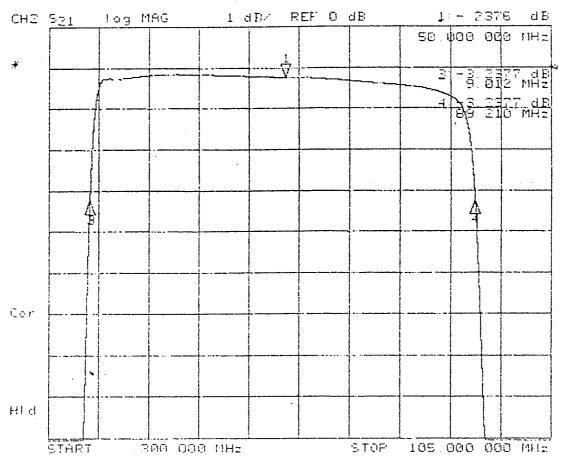
{11a}	MIN INSERTION LOSS FREQ	27.26 MHz	27.00 Mhz	27.0℃MHz
	MIN INSERTION LOSS PERFORMANCE	-0.1L dB	- <u>0.17</u> dB	- <u>0.18</u> dB
{11b}	75% BW LOWER BANDEDGE FREQ	11.03 MHz	1 <u>0.96</u> Mhz	[0.9] MHz
	75% BW LOWER BANDEDGE I.L. PERF	<u>- O.4O</u> dB	- <u>0.43</u> dB	- <u>045</u> dB
{11c}	75% BW UPPER BANDEDGE FREQ	<u>]1,03</u> MHz	70.90Mhz	7 <u>0.91</u> MHz
	75% BW UPPER BANDEDGE I.L. PERF	-0.40 dB	- <u>0.43</u> dB	- <u>0.45</u> dB
{11d}	PERFORMANCE DELTA	0.24 dB	0.76 dB	().27 dp

{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	0.24 dB	0,26 dB	0.27 dB
(i.e. @ (iib) - i.e. (a) { [[a] }			

{11e} PERFORMANCE DELTA	0.24 dB	0.26 dB	0.27 dB
(I.L. @ {11c} - I.L. @ {11a})	<u></u> ub	<u>O'ZO</u> UB	<u> </u>

apared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APCJ.DOC	SHEET	13

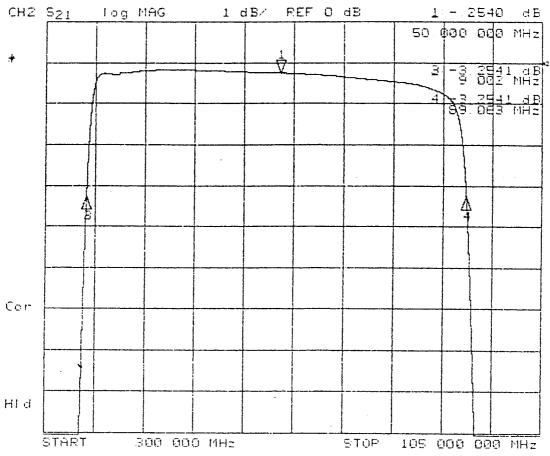


FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-012

-10C DATA

OPR: R. HOGGATT DATE DEC 1 8 1996 MARKER PARAMETUL

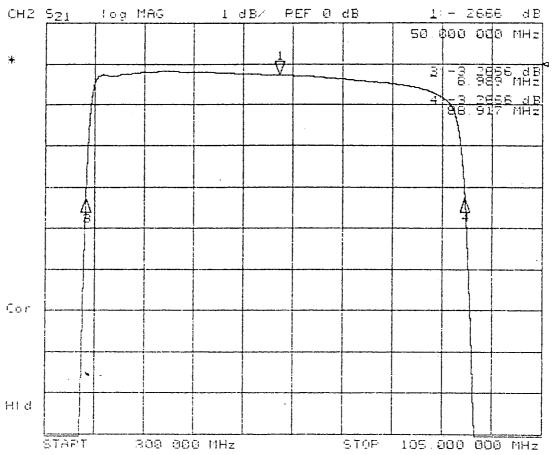
MARKER 1	14 000000 MHz OFF	50.000000 NHz - 2376 dB
MARKER Z	86 000000 MHz OFF	49.111420 MHz OFF
MARKER 3	20.000000 MH≥ OFF	9 Ø12366 MHz -3 2377 dB
MARKER 4	80 000000 MHz OFF	89.210474 MHz -3.2377 dB
IMP STIMULUS OFFSET	0.000000 MHz 0 dF	89.425802 MH± -3 2342 dB
PEFERENCE NARKER FLACEMENT	OFF CONTINUOUS	OFF CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE		-3 dB
MARKER WIDTH VALUE	-3 dB -3 dB	-3 dB OFF
MARKER TRACKING	0FF	ÖFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-012 +15C DATA

MARKER PARAME OPR: R. HOGGATT DATE DEC 1 8 1996

14 000000 MHz	50.000000 MH±
OFF	−.2540 dB
85 000000 MHz	49.032675 MHz
OFF	OFF
28.090000 MHz	9.002166 MHz
OFF	-3 2541 dB
୫୦.ଡ଼୦୭ଥୟର MHz	89 063183 MHz
୦୮୮	-3.2541 dB
0.000000 MHz	89.425802 MHz
0 dB	-3.2342 dB
OFF CONTINUOUS OFF -14 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF
	0FF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-012 +40C DATA

MARKER PARAMETERS OPR: R. HOGGATT DATE DEC 1 8 1996

	50 000000 MHz 2666 dB
### DBOGDB	
OF	48.953472 MHz F
	8.989862 MHz 2686 dB
	88 917083 MHz 2666 dB
	89.425802 MH± .2342 dB
uous co 	FF NTINUOUS FF dB dB FF
	OF 000000 MHz -3 000000 MHz -3 000000 MHz -3 000000 MHz -3

APPENDIX C

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL50-80-10SS1 S/N P229-012 AEROJET 1331559-3 REV.

PASSBAND RIPPLE (CON'T)

{11f} RECORD PASS/FAIL (0.5 dB MAX)

(PASS/FAIL

OUT-OF-BAND REJECTION

ACCEPTANCE TEST PROCEDURE

(11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S)

-10°C

+15°C

+40°C

63-0005-02 PARA 4.5.5

Fc=50.0 MHz.

REF {5A} FOR INSERTION LOSS @ Fc

{12} WORST CASE REJECTION FROM 0.300 MHz TO 1.0 MHz

>100 dB (40.0 dB MIN)

>100 dB (40.0 dB MIN)

7100 dB (40.0 dB MIN)

{13a} WORST CASE REJECTION FROM

102.0 MHz TO 1000.0 MHz

- 63.7 dB (40.0 dB MIN) -54.5 dB (40.0 dB MIN)

-55.3 dB (40.0 dB MIN)

{13c} RECORD MEASURED TEMPERATURE

-130°C (-15.0 TO -10.0) (12.5 TO 17.5)

+ K. | °C

+43.8 °C (40.0 TO 45.0)

{14} ATTACH REJECTION PERFORMANCE

X-Y PLOT(S)

TEST PERFORMED BY 16. HOGG

Not witnessed NOTE IF TEST WITNESSED BY AESD: this time. DLD

***** END OF FUNCTIONAL PERFORMANCE TEST ****

OUTLINE AND MOUNTING DIMENSIONS VERIFICATION

{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT

DIMENSION AND TOLERANCE

ACTUAL **MEASUREMENT**

OVER ALL LENGTH

 $3.50 \pm .03$

3.499

MOUNTING HOLE CENTER

 $0.125 \pm .010$

0.124

BETWEEN UPPER MOUNTING HOLES

3.250

3.251

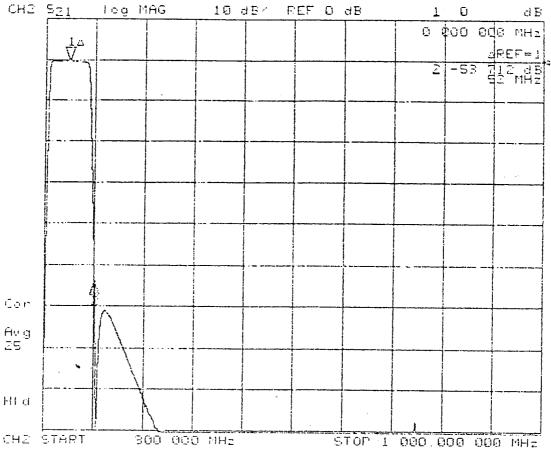
BETWEEN LOWER MOUNTING HOLES

3.250

3,250

repared in accordance with MIL-STD-100

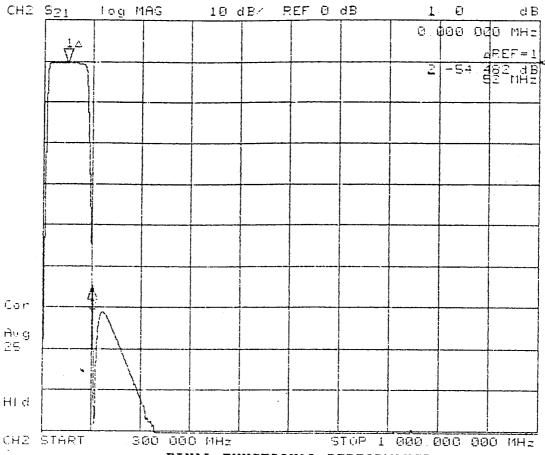
CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: ACAD/63/0502APCJ.DOC		SHEET	14



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-012 -10C DATA

MOPILER PREMILE OPR: R. HOGGATT DATE EC 1 8 1996

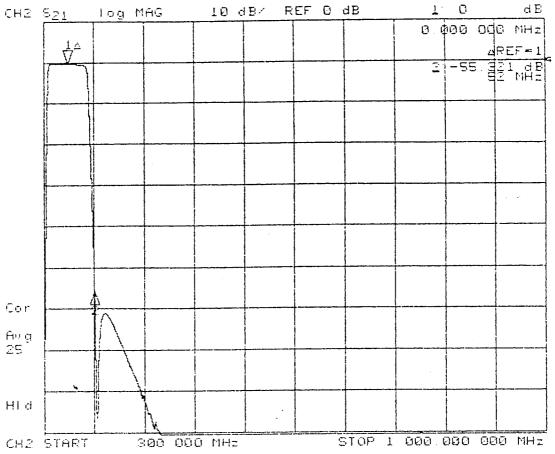
MARKER 1	1 000000 MHz 0FF	50.0000000 MH≥ O dB
MARINER 2	5 000000 MH₂ OFF	102.000000 MH; -53 712 dB
MARKER 3	5.000000 MHz OFF	102.000000 MHz OFF
MARKER 4	5.000000 MHz OFF	1600.000000 MHz OFF
MKR STIMULUS OFFSET	6.000000 MHz 0 dB	0 000000 IIHz
PEFERENCE MARKER PLACEMENT MARKER SEARCH TARGET MALUE MARKER WIDTH MALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	MARKER ! CONTINUOUS OFF -3 dB -3 dB OFF



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-012 +15C DATA

MARKER PARAME. ... OPR: R. HOGGATT DATE DEC 18 1996

1.000000 MHz	50.000000 MHz
0FF	0 dB
5.000000 MHz	102 000000 MHz
OFF	-54.482 dB
5 000000 MHz	102 000000°MH≥
OFF	OFF
5 000000 MHz	1000.000000 MHz
OFF	OFF
0.000000 MHz	0 dB
0 dB	0.000000 MHz
OFF	MARKER 1
CONTINUOUS	CONTINUOUS
OFF	OFF
-3 dB	-3 dB
-3 dB	-3 dB
OFF	OFF
OFF	OFF
	5.000000 MHz OFF 5.000000 MHz OFF 6.000000 MHz OFF 0.000000 MHz OFF CONTINUOUS OFF -3 dB -3 dB OFF



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-012 +40C DATA

-3 dB OFF

OFF

OPR: R. HOGGATT DATE DEC 1 8 1996

MAPKER PARAMETERS	HOGGATT DATE	2
MARKER 1	1 000086 MHz OFF	50.000000 MHz O dB
MARKER Z		102 000000 MHz -55.321 dB
MARKER 3		102.000000 MH± OFF
MARKER 4	5 000000 MHz OFF	1000 000000 MHz OFF
MKR STIMULUS OFFSET	0 48 0 000000 MHz	0.000000 MHz 0 dB
PEFERENCE MAPKER PLACEMENT NAPHER SEARCH TARGET VALUE NMMKER NIDTH VMCVE	OFF CONTINUOUS OFF -3 dB -3-dB	MARKER 1 CONTINUOUS OFF -3 dB -8-88

-3 g₽ OFF

MARKER TRACKING

APPENDIX C

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL50-80-10SS1 S/N PZ29 - GIZ AEROJET 1331559-3 REV.

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +22.4 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

√(√)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	- <u>104.5</u> dB	F11	(*) 60.0	MHz	-0.31 dB
F2	1.0	MHz	- 95.Z dB	F12	(*) 70.0	MHz	-0.41 dB
F3	5.0	MHz	-31.3 dB	F13	80.0	MHz	- 0.62 dB
F4	7.5	MHz	-10.7 dB	F14	85.0	MHz	-0.86 qB
F5	10.0	MHz	-1.49 dB	F15	90.0	MHz	<u>-5.77</u> dB
F6	15.0	MHz	-0.30 dB	F16	100.0	MHz	<u>- 44.5</u> dB
F7	20.0	МНz	-0.21 dB	F17	200.0	MHz	- 82.2 dB
F8	(*) 30.0	MHz	-0.18 dB	F18	300.0	MHz	-108.5 dB
F9	(*) 40.0	MHz	-0.23 dB	F19	500.0	MHz	-107.3 dB
F10	50.0	MHz	-0.27 dB	(£) F20	1000.0	MHz	-104.1 dB
TEST	PERFORM	ED BY:	R. HOGGET	DATE_	12 18 96	1411 12	

NOTE IF TEST WITNESSED BY AESD_ Not witnessed this time. DLD ----

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX C PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

Prepared in accordance with MIL-STD-100

DADEN-ANTHONY ASSOCIATES INC.		CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
		AD/63/0502APCJ.DOC	SHEET	11

POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P229-012 AMBIENT

MARKER FARAME... OPR: R. HOGGATT DATE DEC 1 8 1996

MARKER 1 30.000000 MHz 30 000000 MH: - 1754 dB 40 000000 MHz MARKER 3 -40 000000 MHz -.3313 dB MARKER 3 60 000000 MHz -60 000000 MHz -.3138 dB 70.000000 MHz MARKER 4 70.000000 MHz -.4078 dB MKR STIMULUS OFFSET 0.000000 MH: 0.000000 MHz 0 dB O dB PEFERENCE MARKER OFF OFF PLACEMENT CONTINUOUS CONTINUOUS

OFF

-3 dB

ÛFF

OFF

OFF

-3 dB -3 dB

OFF

OFF

MARKER SEARCH

MARKER TRACKING

TAPGET VALUE MARKER MIRTH VALUE

Channel 3 Bandpass Filter

IF Filter (S/N: 1331559-3, S/N: P229-002)

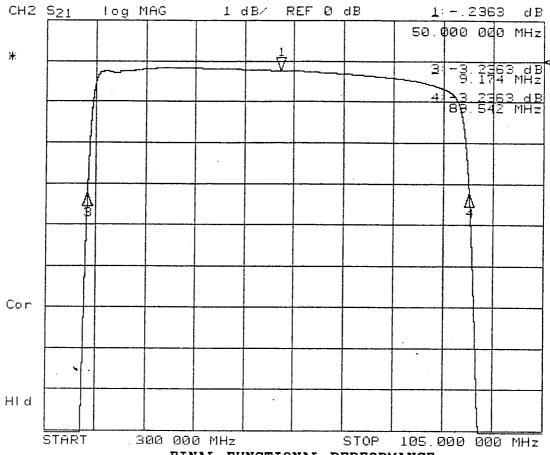
	APPENDIX C	QUALIFIC/	ATION TEST REI	PORT	<u> </u>
	BANDPASS FILTER MODEL HL50 AEROJET 1331559-3 REV.				
	3.0 dB BANDWIDTH QUALIFICATION TEST PROCEDU 63-0005-010 PARA 4.5.3	JRE	-10°C	+15°C	+40°C
	{7} UPPER 3.0 dB BANDEDGE		<u>89.54</u> MHz (88.0-90.0)	<u>89.40</u> Mhz (88.0-90.0)	<u>89.24 </u> MHz (88.0-90.0)
	{8} LOWER 3.0 dB BANDEDGE		9.17 MHz (8.0-10.0)	9.16 Mhz (8.0-10.0)	<u>4.15</u> MHz (8.0-10.0)
	{9} 3.0 dB RELATIVE BANDWIDTH		<u>80.37</u> MHz (78.0-82.0)	<u>80.24</u> Mhz (78.0-82.0)	<u>80.09</u> мнz (78.0-82.0)
	$\{10\}\ ADD\ \{7\}\ AND\ \{8\} \div 2 =$		4 <u>9.36</u> MHz (50.0 NOM)	<u>49.28</u> MHz (50.0 NOM)	4 <u>9.20</u> Mhz (50.0 NOM)
	{10a} RECORD MEASURED TEMP	ERATURE	(-15.0 TO -10.0)	+ <u> 4.5</u> °C) (12.5 TO 17.5)	+ <u>44.0</u> °C (40.0 TO 45.0)
	(6) ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	3	<u>√</u> (√)	<u> </u>	<u>√</u> (√)
	PASSBAND RIPPLE QUALIFICATION TEST PROCEDUR 63-0005-010 PARA 4.5.4	₹E	-10°C	+15°C	+40°C
	{11a} MIN INSERTION LOSS FREC)	27.60 MHz	<u>27.∞</u> Mhz	<u>27.00</u> mHz
	MIN INSERTION LOSS PERF	FORMANC	E <u>-0.17</u> dB	- <u>0.17</u> dB	- <u>0.18</u> dB
	{11b} 75% BW LOWER BANDEDGE	∃ FREQ	11.70 MHz	11.12 Mhz	11.06MHz
	75% BW LOWER BANDEDGI	E I.L. PERF	= - <u>0.39</u> dB	- <u>0.41</u> dB	- <u>0.43</u> dB
,	{11c} 75% BW UPPER BANDEDGE	FREQ	71.20 MHz	71.12Mhz	71.06MHz
	75% BW UPPER BANDEDGE	I.L. PERF	- <u>0.39</u> dB	- <u>0.41</u> dB	- <u>0.43</u> dB
1	{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})		<u>0.22</u> dB	0.24 dB	<u>O.25</u> dB
{	{11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})		<u>0.22</u> dB	<u>0.25</u> dB	0.25 _{dB}
Prepa	ared in accordance with MIL-STD-100				
CON	ITRACT NO.	Α	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DAT	DEN-ANTHONY ASSOCIATES INC	al			

FILE: ACAD/63/0510APCH.DOC

SHEET

13

DADEN-ANTHONY ASSOCIATES INC.



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-002

-10C DATA
OPR: R. HOGGATT DATE 1 26 96

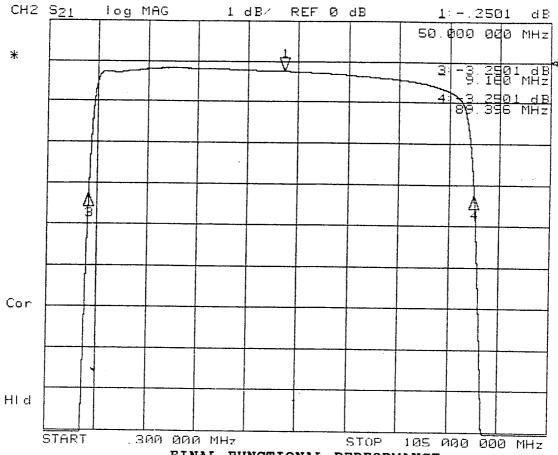
MARKER PARAME. L... OPR: R. HOGGATT DATE 1/26/96

MARKER 1	14.000000 MHz OFF	50.000000 MH≥ 2363 dB
MARKER 2	86.0000000 MHz OFF	49.358422 MHz OFF
MARKER 3	20.000000 MHz OFF	9.174268 MHz -3.2363 dB
MARKER 4	80.000000 MHz OFF	89.542576 MHz ~3.2363 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF

OFF

OFF

MARKER TRACKING



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-002 +15C DATA

OPR: R. HOGGATT DATE 11 76 96 MARKER PARAME, Los Journnel 2

MARKER SEARCH

TARGET VALUE

MARKER TRACKING

MARKER WIDTH VALUE

MARKER 1	14.000000 MHz OFF	50.000000 MHz 2501 dB
MARKER 2	86.000000 MHz OFF	49.278697 MHz OFF
MARKER 3	20.000000 MHz OFF	9.160884 MHz -3.2501 dB
MARKER 4	80.000000 MHz OFF	89.396511 MHz -3.2501 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT	OFF CONTINUOUS	OFF CONTINUOUS

OFF

-3 dB OFF

OFF

-14 dB

CONTINUOUS

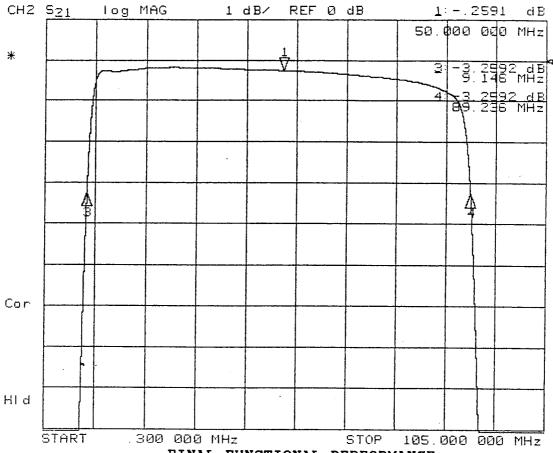
OFF

-3 dB

-3 dB

OFF

OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-002

+40C DATA

OPR: R. HOGGATT DATE 11/76/96

APPENDIX C

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL50-80-10SS1 S/N P229-GGZ AEROJET 1331559-3 REV. E

PASSBAND RIPPLE (CON'T)

{11f} RECORD PASS/FAIL (0.5 dB MAX)

(PASS)FAIL

(PASS)FAIL

(PASS)FAIL

(11g) ATTACH PASSBAND RIPPLE

PERFORMANCE X-Y PLOT(S)

/ (V)

OUT-OF-BAND REJECTION

63-0005-010 PARA 4.5.5

QUALIFICATION TEST PROCEDURE

-10°C

+15°C

+40°C

Fc=50.0 MHz.

REF (5A) FOR INSERTION LOSS @ Fc

{12} WORST CASE REJECTION FROM 0.300 MHz TO 1.0 MHz

>100 dB (40.0 dB MIN) > 100 dB (40.0 dB MIN) >100 dB (40.0 dB MIN)

{13a} WORST CASE REJECTION FROM

102.0 MHz TO 1000.0 MHz

TEST PERFORMED BY \(\lambde{\alpha}\).

-54.4 dB (40.0 dB MIN) -53,2 dB (40.0 dB MIN) -54. I dB (40.0 dB MIN)

{13c} RECORD MEASURED TEMPERATURE

-13.5 °C

+ 14.5°C (-15.0 TO -10.0) (12.5 TO 17.5) +44.0°C (40.0 TO 45.0)

{14} ATTACH REJECTION PERFORMANCE

X-Y PLOT(S)

NOTE IF TEST WITNESSED BY AESD: ____ GSI:

1-106GATT DATE 11/26/90

> DOT WIT NESSED

***** END OF FUNCTIONAL PERFORMANCE TEST ****

OUTLINE AND MOUNTING DIMENSIONS VERIFICATION

{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT

DIMENSION AND TOLERANCE

ACTUAL MEASUREMENT

OVER ALL LENGTH

 $3.50 \pm .03$

3.50

MOUNTING HOLE CENTER

 $0.125 \pm .010$

,126

BETWEEN UPPER MOUNTING HOLES

3.250

3.250

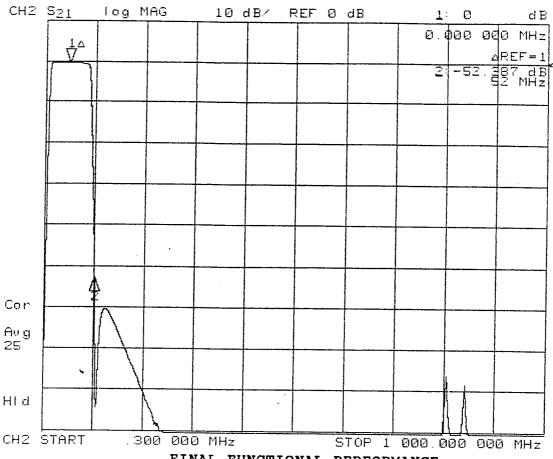
BETWEEN LOWER MOUNTING HOLES

3.250

3,250

Prepared in accordance with MIL-STD-100

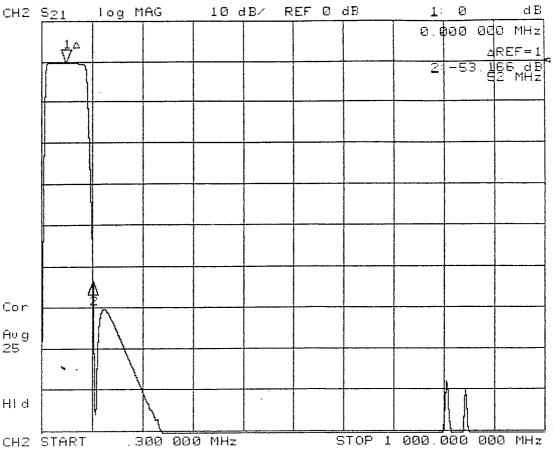
CONTRACTAGE	-			•
CONTRACT NO.	SIZE	CAGE CODE	DWG. NO.	REV.
	Α	57032	63-0005-010	Н
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APCH DOC	QUEET	14



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-002

-10C DATA

MARKER 1	1.000000 MHz OFF	50.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	102.000000 MHz -52.387 dB
MARKER 3	5.000000 MH≥ OFF	102.000000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB
MARKER TRACKING	OFF	OFF OFF



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-002

+15C DATA

MARKER TRACKING

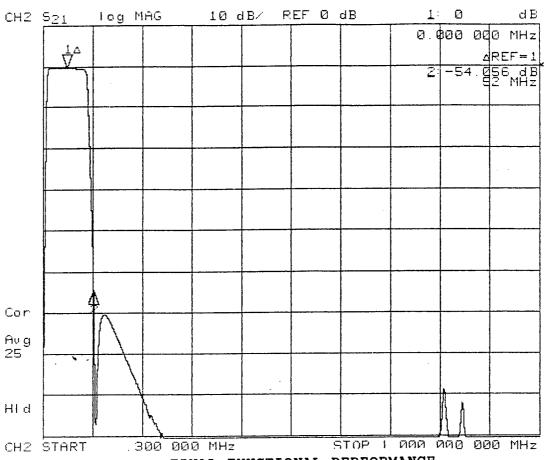
OPR: R. HOGGATT DATE 11/26/96 MARKER PARAMETLING

MARKER 1	1.000000 MHz OFF	0 dB 0 dB
MARKER 2	5.000000 MHz OFF	102.000000 MHz -53.166 dB
MARKER 3	5.000000 MHz OFF	102.000000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 ·MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB	MARKER 1 CONTINUOUS OFF -3 dB -3 dB

OFF

OFF

OFF OFF



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-002

+40C DATA

MARKER PARAMETERS OPR: R. HOGGATT DATE 11/26/96 Channel 2

MARKER 1	1.000000 MHz OFF	50.000000 MHz 0 dB
MARKER 2	5.000000 MHz ÖFF	102.000000 MHz -54.056 dB
MARKER 3	5.000000 MHz OFF	102.000000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	MARKER 1 CONTINUOUS . OFF -3 dB -3 dB OFF OFF

APPENDIX C

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL50-80-10SS1 S/N P279-002 AEROJET 1331559-3 REV.

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +23.5 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

/(V)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-103.6 dB	F11	(*) 60.0	MHz	- O 20 4D
F2	1.0	MHz	-95.1 dB	F12	(*) 70.0	MHz	-0.32_dB
F3	5.0	MHz	-32.1 dB	F13	• •		- <u>0.40</u> dB
F4	7.5	MHz	-11.6 dB		80.0	MHz	- <u>0.61</u> dB
F5	10.0			F14	85.0	MHz	- <u>0.87</u> dB
		MHz	<u>-1.72</u> dB	F15	90.0	MHz	-4.95 dB
F6	15.0	MHz	<u>-0.31</u> dB	F16	100.0	MHz	-43.2 dB
F7	20.0	MHz	- 0.23 dB	F17	200.0	MHz	- 80.7 dB
F8	(*) 30.0	MHz	-0.18 dB	F18	300.0		
F9	(*) 40.0	MHz	- 0.22 dB			MHz	-101.1 dB
F10	` '			F19	500.0	MHz	- <u>103.3</u> dB
1 10	50.0	MHz	-0,2C dB	F20	1000.0	MHz	-104.9 dB
TEST	PERFORM	ED BY:_	R. HOGGATT	DATE_	11/26/96	OA S	

NOTE IF TEST WITNESSED BY AESD GSI

***** END OF BANDPASS CHARACTERISTICS TEST *****

> not witnessed

FUNCTIONAL PERFORMANCE TEST

QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX C PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER QTP PARA 4.5.1.
- b.) INSERTION LOSS PER QTP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER QTP PARA 4.5.5.

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COLUTE				

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES I	FILE: AC	AD/63/0510APCH.DOC	SHEET	11

30.000 000 MHz AMA 2 - 2243 dB 40 MHz 3 - 3157 dB 60 MHz 4 - 3961 dB 70 MHz	
22243 dB 40 MHz 33157 dB 80 MHz	
3 - 31 <u>97 dB</u>	4
3 - 3157 dB 60 MHz 4 - 3951 dB 70 MHz	
4 - 39E1 dB	
TO REMARKS	t
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Cor	
Aug	
25	
на	
CH2 START .300 000 MHz STOP 1 010 000 000 MHz	

POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P229-002 AMBIENT

MARKER PARAMET OPR: R. HOGGATT DATE 11 ZG 96

MARKER 1	1.000000 MHz OFF	30.000000 MHz 1818 dB
MARKER 2	5.000000 MHz OFF	40.000000 MHz 2243 dB
MARKER 3	5.000000 MHz OFF	60.000000 MHz 3157 dB
MARKER 4	5.000000 MHz OFF	70.000000 MHz 3981 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF

Channel 4 Bandpass Filter

IF Filter (S/N: 1331559-2, S/N: P228-003)

	APPENDIX B	QUALIFICA	TION TEST REPO	ORT		
ł	BANDPASS FILTER MODEL HL10 AEROJET 1331559-2 REV.)5-190-10S8 —	61 S/N <u>P228</u> -0	003		
	3.0 dB BANDWIDTH QUALIFICATION TEST PROCEDU 63-0005-010 PARA 4.5.3	JRE	-10°C	+15°C	+40°C	
	{7} UPPER 3.0 dB BANDEDGE		1 <u>99,30</u> MHz (198.0-200.0)	1 <u>98,95</u> Mhz (198.0-200.0)	1 <u>98.62</u> MHz (1480.01500.0)	
	{8} LOWER 3.0 dB BANDEDGE		9.22 _{MHz} (8.0-10.0)	<u>9.21</u> Mhz (8.0-10.0)	<u>9.19</u> MHz (8.0-10.0)	
	{9} 3.0 dB RELATIVE BANDWIDTH	l	1 <u>90.08</u> MHz (188.0-192.0)	1 <u>89.74</u> Mhz (188.0-192.0)	1 <u>89.43 </u> MHz (188.0-192.0)	
	{10} ADD {7} AND {8} ÷ 2 =		1 <u>04.26</u> MHz (105.0 NOM)	1 <u>04.08</u> MHz (105.0 NOM)	1 <u>03.91</u> Mhz (105.0 NOM)	
	{10a} RECORD MEASURED TEMP	PERATURE	- <u>13.4</u> °C (-15.0 TO -10.0)		+ <u>43.4</u> °C (40.0 TO 45.0)	
	(6) ATTACH TRANSMISSION LOS PERFORMANCE X-Y PLOT	S	(1)	(\lambda)	(√)	
	PASSBAND RIPPLE QUALIFICATION TEST PROCEDU 63-C005-010 PARA 4.5.4	RE	-10°C	+15°C	+40°C	
	{11a} MIN INSERTION LOSS FRE	Q	19.32 MHz	19.91 Mhz	19.92 MHz	
	MIN INSERTION LOSS PER	FORMANC	E - <u>0,07</u> dB	- <u>0,07</u> dB	- <u>0.08</u> dв	
	{11b} 75% BW LOWER BANDEDG	E FREQ	<u>14.17</u> MHz	14.02 Mhz	13.86 MHz	
	75% BW LOWER BANDEDO	SE I.L. PER	F -0.24 dB	-0.26 dB	- <u>0.78</u> dB	
	{11c} 75% BW UPPER BANDEDG	E FREQ	1 <u>56.67</u> MHz	1 <u>56.52</u> Mhz	156.36MHz	
	75% BW UPPER BANDEDG	E I.L. PERF	= <u>-0.24</u> dB	- <u>0.26</u> dB	- <u>0.28</u> dB	
	{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})		<u>0.17</u> dB	- <u>0.19</u> dB	<u>0.20</u> dB	
	{11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})		0.17 dB	- <u>0.19</u> dB	<u>0,20</u> dB	
	pared in accordance with MIL-STD-100					
O	NTRACT NO.	SIZE	CAGE CODE	DWG. NO.	REV.	_

57032

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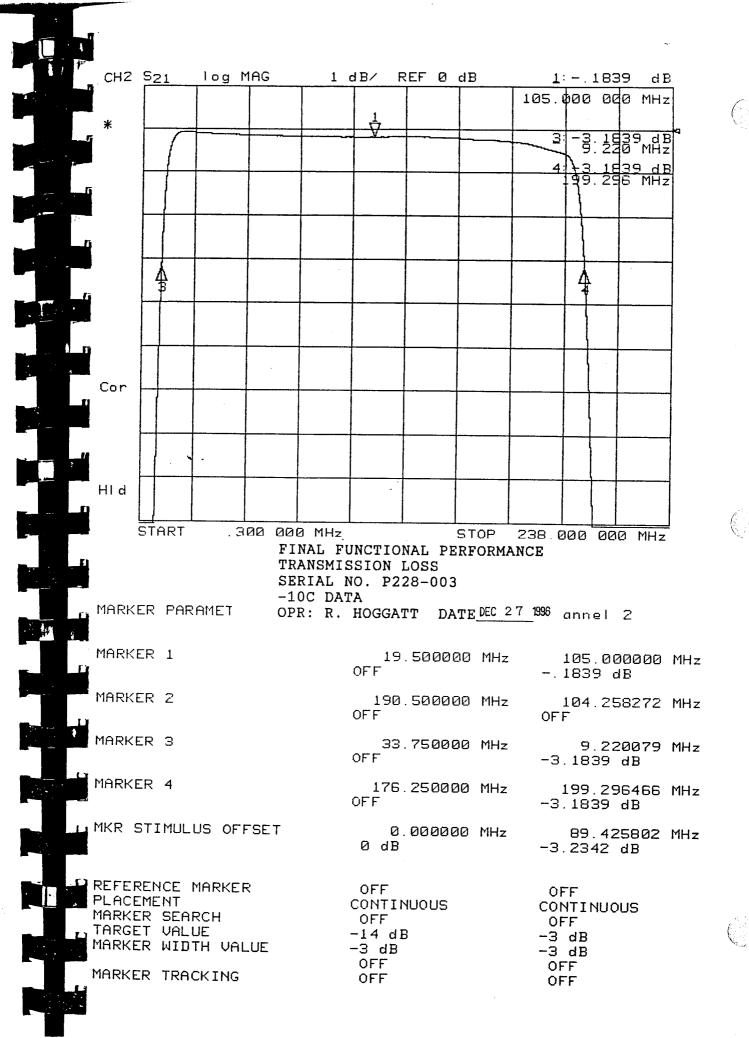
DADEN-ANTHONY ASSOCIATES INC. FILE ACAD/63/0510APBH.DOC

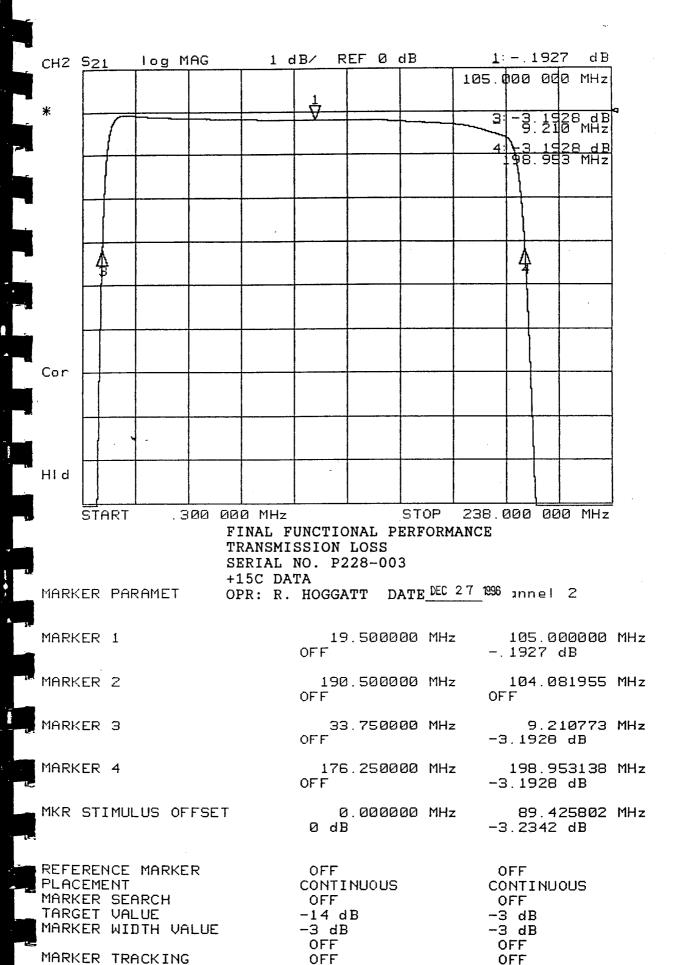
63-0005-010

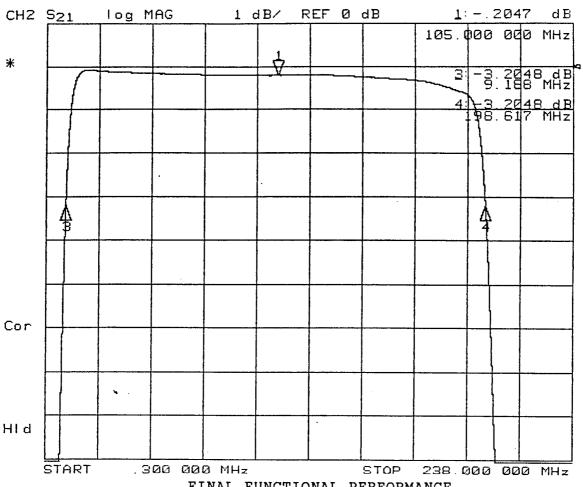
SHEET

Н

13







FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P228-003

+40C DATA

MARKER TRACKING

MARKER PARAMET OPR: R. HOGGATT DATE DEC 27 1996 innel 2

THREE PHANTEL OF R. R.	HOGGATI DATE DEC 21	1000 XIIITE1 Z
MARKER 1	19.500000 MHz OFF	105.000000 MHz 2047 dB
MARKER 2	190.500000 MHz OFF	103.903114 MHz OFF
MARKER 3	33.750000 MHz OFF	9.188325 MHz -3.2048 dB
MARKER 4	176.250000 MHz OFF	198.617903 MHz -3.2048 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF
MADICED TOGOLOGIC		

OFF

OFF

APPENDIX B

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 S/N P228-003 AEROJET 1331559-2 REV.

PASSBAND RIPPLE (CON'T)

{11f} RECORD PASS/FAIL (0.5 dB MAX)

(11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S)

OUT-OF-BAND REJECTION

QUALIFICATION TEST PROCEDURE

-10°C

+15°C

+40°C

63-0005-010 PARA 4.5.5 Fc=105.0 MHz.

REF (5A) FOR INSERTION LOSS @ Fc

{12} WORST CASE REJECTION FROM 0.300 MHz TO 1.0 MHz

-<u>59.4</u>dB (40.0 dB MIN)

-59.3 dB (40.0 dB MIN)

-59,3 dB (40.0 dB MIN)

{13a} WORST CASE REJECTION FROM 228.5 MHz TO 1000.0 MHz

-<u>41.4</u> dB (40.0 dB MIN)

-<u>41.4</u> dB (40.0 dB MIN) -41.5 dB (40.0 dB MIN)

{13c} RECORD MEASURED TEMPERATURE

-13.3 ℃

+15.1°C

+43.2 °C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0)

{14} ATTACH REJECTION PERFORMANCE X-Y PLOT(S)

TEST PERFORMED BY K. HOGGAN DATE 12/27/96

NOTE IF TEST WITNESSED BY AESD: _____ GSI: _ this time. DLD

Not witnessed

***** END OF FUNCTIONAL PERFORMANCE TEST ****

OUTLINE AND MOUNTING DIMENSIONS VERIFICATION

{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF

DIMENSION AND

ACTUAL

MEASUREMENT

TOLERANCE

MEASUREMENT

OVER ALL LENGTH

 $3.50 \pm .03$

3.500

MOUNTING HOLE CENTER

 $0.125 \pm .010$

0.127

BETWEEN UPPER MOUNTING HOLES

3.250

3.250

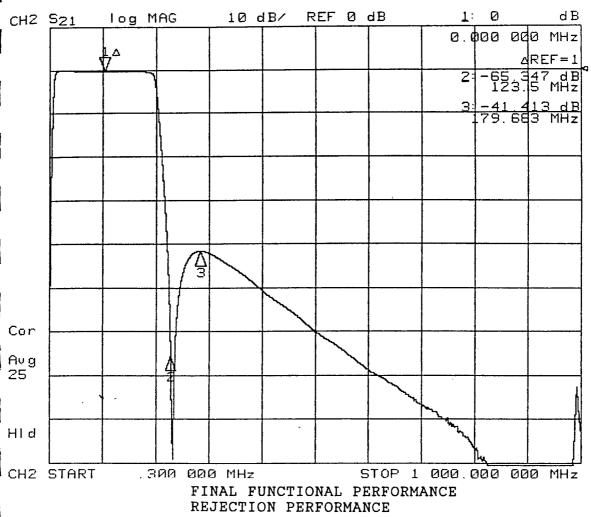
BETWEEN LOWER MOUNTING HOLES

3.250

3.250

Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APBH.DOC	SHEET	14



SERIAL NO. P228-003

-10C DATA

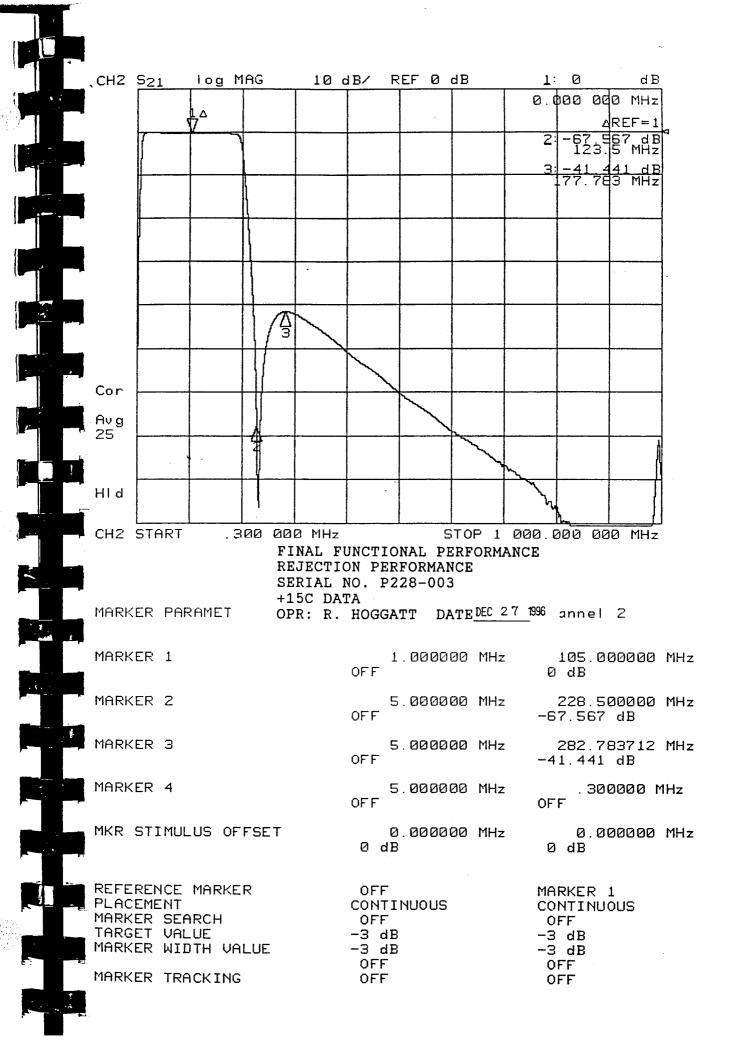
MARKER TRACKING

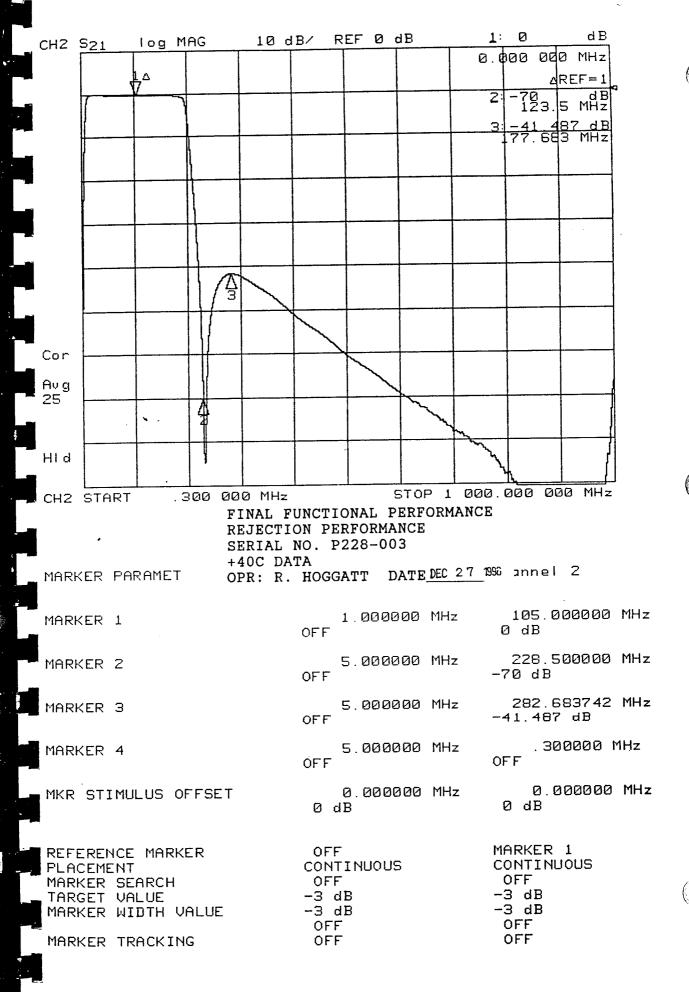
MARKER PARAMET OPR: R. HOGGATT DATEDEC 27 1996 annel 2

MARKER 1	1.000000 MHz OFF	105.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	228.500000 MHz -65.347 dB
MARKER 3	5.000000 MHz OFF	284.683142 MHz -41.413 dB
MARKER 4	5.000000 MHz OFF	.300000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF

OFF

OFF





APPENDIX B

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 S/N_P2Z8 - 003 AEROJET 1331559-2 REV.

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. + 22.7 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

____(\1)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	<u>- &3.0 </u> dB	F11	(*) 130.0	MHz	-0.20 dB
F2	1.0	MHz	<u>- 66 ,5</u> dB	F12	(*) 150.0	MHz	-0.26 dB
F3	5.0	MHz	<u>-17.9</u> dB	F13	180.0	MHz	-0.44 dB
F4	7.5	MHz	<u>- 7,52</u> dB	F14	190.0	MHz	-0.62 dB
F5	10.0	MHz	<u>- 1.86</u> dB	F15	200.0	MHz	-4.28 dB
F6	20.0	MHz	<u>-0.07</u> dB	F16	250.0	MHz	-47.1 dB
F7	40.0	MHz	<u>-0.10</u> dB	F17	300.0	MHz	-42,2 dB
F8	(*) 60.0	MHz	<u>-0.16</u> dB	F18	400.0	MHz	-50.8 dB
F9	(*) 80.0	MHz	<u>-0.19</u> dB	F19	500.0	MHz	-60.3 dB
F10	105.0	MHz	-0.70 dB	F20	1000.0	MHz	-71,4 dB
				}			

TEST PERFORMED BY: P. HOGGATT DATE 12/27/96

NOTE IF TEST WITNESSED BY AESD_____ GSI__ Not witnessed this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

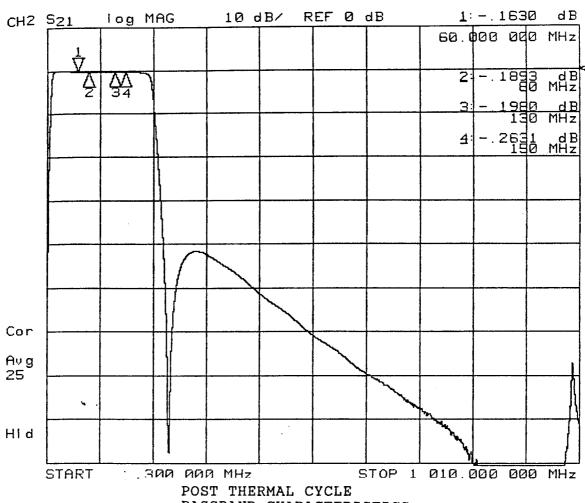
QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX B PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER QTP PARA 4.5.1.
- b.) INSERTION LOSS PER QTP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER QTP PARA 4.5.5.

Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APBH.DOC	SHEET	11



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P228-003 AMBIENT

MARKER PARAME OPR: R. HOGGATT DATE DEC 27 1996 January 2

	MARKER 1	17.750000 MHz OFF	60.000000 MHz 1630 dB
	MARKER 2	157.250000 MHz OFF	80.000000 MHz 1893 dB
	MARKER 3	29.375000 MHz OFF	130.000000 MHz 1980 dB
	MARKER 4	145.625000 MHz OFF	150.000000 MHz 2631 dB
	MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB

REFERENCE MARKER	OFF	OFF
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-14 dB	-3 dB
MARKER WIDTH VALUE	-3 dB	-3 dB
Montage	OFF	OFF
MARKER TRACKING	OFF	OFF

Channel 5 Bandpass Filter

IF Filter (S/N: 1331559-5, S/N: P231-002)

APPENDIX E

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL115-170-10SS1 S/N P231-GO2 AEROJET 1331559-5 REV. E

3.0	dB	BA	ND	WI	DTH

QUALIFICATION TEST PROCEDURE -10°C +15°C +40°C 63-0005-010 PARA 4.5.3

{7} UPPER 3.0 dB BANDEDGE	<u>199.34</u> MHz	<u>[99.01</u> Mhz	1 <u>98.75</u> MHz
	(198.0-200.0)	(198.0-200.0)	(198.0-200.0)
(8) LOWER 3.0 dB BANDEDGE	31.31 MHz	31.25Mhz	<u>31.20</u> MHz
	(30.0-32.0)	(30.0-32.0)	(30.0-32.0)
(9) 3.0 dB RELATIVE BANDWIDTH	ነ <u>ሬ ሄ.ሪ3</u> мНz (166.0-170.0)	Mhz <u>(166.0-1</u> 70.0)	1 <u>67.55</u> MHz (166.0-170.0)
{10} ADD {7} AND {8} ÷ 2 =	1 <u>15.33</u> MHz	15.13 MHz	l <u>(5.98</u> Mhz
	(115.0 NOM)	(115.0 NOM)	(115.0 NOM)
J103) PECOPD MEASURED TEMPERATURE	-133°C	+11 ()00	112 Jan

{10a} RECORD MEASURED TEMPERATURE	: - <u>13.5</u> °C	+ <u>16.0</u> °C	+42.7°C
	(-15.0 TO -10.0)	(12.5 TO 17.5)	(40.0 TO 45.0)
(6) ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	<u> </u>	<u> </u>	(√)

PASSBAND RIPPLE

QUALIFICATION TEST PROCEDURE -10°C +15°C +40°C 63-0005-010 PARA 4.5.4

{1 1a}	MIN INSERTION LOSS FREQ	<u>55.36</u> MHz	57.08 Mhz	<u>55.3</u> 6MHz
	MIN INSERTION LOSS PERFORMANCE	- <u>0,70</u> dB	-0.21 dB	- 0.22 dB

{11b} 75% BW LOWER BANDEDGE FREQ	35.01 _{MHz}	34.84 Mhz	34.71 MHz
75% BW LOWER BANDEDGE I.L. PERF	<u>- О.4О</u> dВ	- <u>0.42</u> dB	- <u>0.25</u> dB

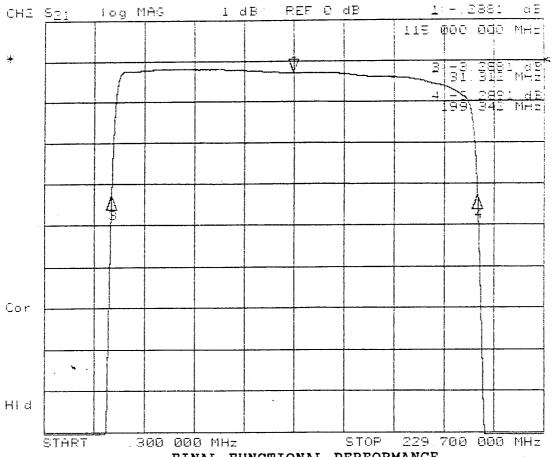
{11c} 75% BW UPPER BANDEDGE FREQ	1 <u>62.51</u> MHz	1 <u>62.34</u> Mhz	1 <u>62.21</u> MHz
75% BW UPPER BANDEDGE I.L. PERF	- <u>0.40</u> dB	- <u>0.42</u> dB	- <u>0.25</u> dB

{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	<u>O.2O</u> dB	<u>O.Z1</u> dB	0.22 dB
(1.2. @ (11b) - 1.2. @ (11a))			

{11e} PERFORMANCE DELTA	0.20 dB	0.21 dB	0.23 dB
(I.L. @ {11c} - I I. @ {11a})	<u>o (co</u> ub	UD	<u>0123 ab</u>

Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APEH.DOC	SHEET	13

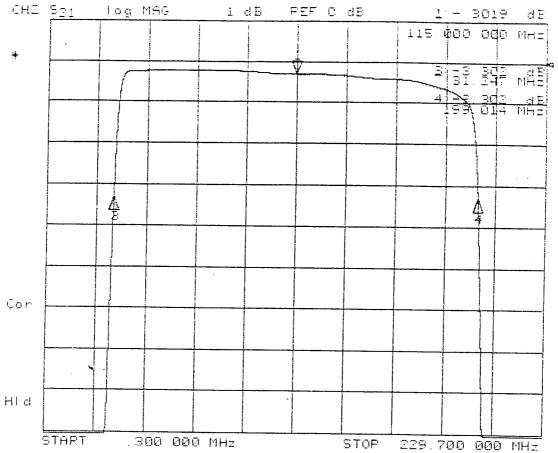


FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P231-002

-10C DATA

		OPK:	к.	HOGGATT	DATE CHIP	سا	
MARKER	PARAME.L				_	nnel	2

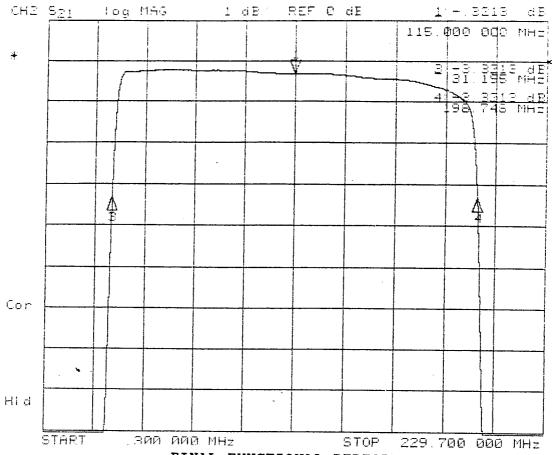
MARKER 1	38.500000 MHz OFF	115.000000 MHz 2881 dB
MARKER 2	191.500000 MHz OFF	115.327611 MHz OFF
MARKER 3	51.250000 MHz OFF	31.312833 MHz -3.2881 dB
MARKER 4	178.750000 MHz OFF	199.342389 MHz -3.2881 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MH≥ −3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -14 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P231-002 +15C DATA

OPR: R. HOGGATT DATE 12 11 90 MARKER PARAME. ____

MARKER 1	38.500000 MHz OFF	115.000000 MHz 3019 dB
MARKER 2	191.500000 MHz OFF	115.130748 MHz OFF
MARKER 3	51.250000 MHz OFF	31.247283 MHz -3.302 dB
MARKER 4	178.7 50000 MHz OFF	199.014214 MHz -3.302 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB
MARKER TRACKING	OFF	OFF OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P231-002 +40C DATA

+40C DATA
OPR: R. HOGGATT DATE 12 11 44 MARKER PARAME.L.

MARKER TRACKING

MARKER 1	38.500000 MHz OFF	115.000000 MHz 3213 dB
MARKER 2	191.500000 MH± OFF	114.972154 MHz OFF
MARKER 3	51.250000 MHz OFF	31.195837 MHz -3.3213 dB
MARKER 4		198.748472 MHz -3.3213 dB
MKR STIMULUS OFFSET		89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB	OFF CONTINUOUS OFF -3 dB -3 dB

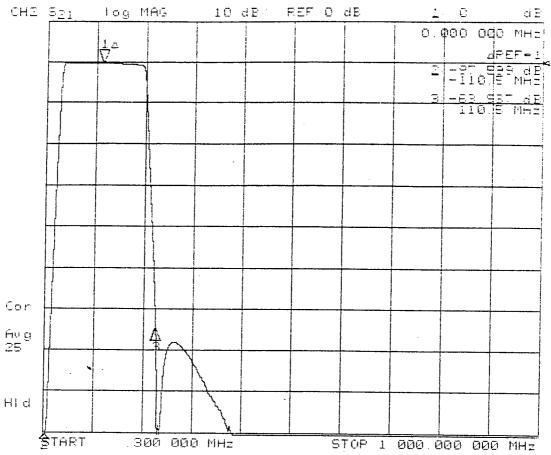
-3 dB OFF

OFF

OFF

APPENDIX E **QUALIFICATION TEST REPORT** BANDPASS FILTER MODEL HL115-170-10SS1 S/N PZ31-GGZ AEROJET 1331559-5 REV. PASSBAND RIPPLE (CON'T) {11f} RECORD PASS/FAIL (0.5 dB MAX) (PASS)FAIL (PASS)FAIL (PASS)FAIL \checkmark (\lor) (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** QUALIFICATION TEST PROCEDURE -10°C +15°C +40°C 63-0005-010 PARA 4.5.5 Fc=115.0 MHz. REF {5A} FOR INSERTION LOSS @ Fc {12} WORST CASE REJECTION FROM 790_dB 790 dB >90 dB 0.300 MHz TO 4.5 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13a} WORST CASE REJECTION FROM -63.9 dB -65.1dB -66.2 dB 225.5 MHz TO 1000.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13c} RECORD MEASURED TEMPERATURE - 13.3 ℃ +15.8°C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45,0) **{14} ATTACH REJECTION PERFORMANCE** X-Y PLOT(S) TEST PERFORMED BY 12. NOTE IF TEST WITNESSED BY AESD: _____ GSI: _ this time. DLD Not witnessed ***** END OF FUNCTIONAL PERFORMANCE TEST **** **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION** {16} REFERENCE CUSTOMER DRAWING 1331559 DESCRIPTION OF DIMENSION AND ACTUAL MEASUREMENT TOLERANCE **MEASUREMENT** OVER ALL LENGTH $3.50 \pm .03$ 3,499 MOUNTING HOLE CENTER $0.125 \pm .010$ 0.123 BETWEEN UPPER MOUNTING HOLES 3.250 3.251 BETWEEN LOWER MOUNTING HOLES 3.250 3.251

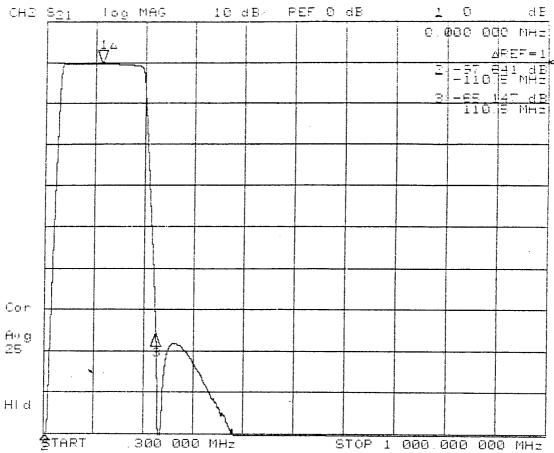
CONTRACT NO.				Was in the second
	SIZE A	57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APEH.DOC	SHEET	14



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P231-002 -10C DATA

MARKER PARAME. OPR: R. HOGGATT DATEIZ 11 46

MARKER 1	1000.000000 MHz OFF	115.000000 MHz 0 dB
MARKER 2	1000.000000 MHz OFF	4.500000 MHz -97.599 dB
MARKER 3	1000.000000 MHz OFF	225.500000 MHz -63.937 dB
MARKER 4	1000.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF OFF



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P231-002 +15C DATA

Januarinel 2

MARKER 1

OFF

-3 dB

-3 dB

OFF

OFF

CONTINUOUS

MARKER PARAMETERS OPR: R. HOGGATT DATE 12 11 94

REFERENCE MARKER

MARKER WIDTH VALUE

MARKER SEARCH

MARKER TRACKING

TARGET VALUE

PLACEMENT

MARKER 1	1000.000000 MHz OFF	115.000000 MHz 0 dB
MARKER 2	1000.000000 MHz OFF	4.500000 MHz -97.641 dB
MARKER 3	1000.000000 MHz OFF	225.500000 MHz -65.147 dB
MARKER 4	1000.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB

OFF

OFF

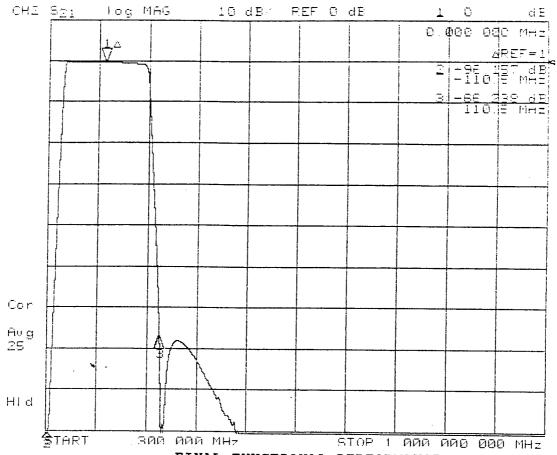
−3 dB

-3 dB

OFF

OFF

CONTINUOUS



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P231-002

+40C DATA

MARKER 1	1000.000000 MHz OFF	115.000000 MHz 0 dB
MARKER 2	1000.000000 MHz OFF	4.500000 MHz -96.157 dB
MARKER 3	1000.000000 MHz OFF	225.500000 MHz -66.238 dB
MARKER 4	1000.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF
		1 No. 1 1

APPENDIX E

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL115-170-10SS1 S/N P23 1-GGZ AEROJET 1331559-5 REV. E

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +23.3 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

 $\sqrt{(1)}$

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	- <u>103.4</u> dB	F11	(*) 130.0	MHz	-0.31 dB
F2	1.0	MHz	-102.2dB	F12	(*) 155.0	MHz	- ن،46 dB
F3	10.0	MHz	<u>-78.2</u> dB	F13	180.0	MHz	-0.65 dB
F4	20.0	MHz	<u>- 38.4</u> dB	F14	190.0	MHz	-0.84 dB
F5	30.0	MHz	<u>- 6.30</u> dB	F15	200.0	MHz	- 4.85 dB
F6	40.0	MHz	<u>-0.26</u> dB	F16	210.0	MHz	-26.8 dB
F7	50.0	МНz	-0.22 dB	F17	300.0	MHz	- 72.8 dB
F8	(*) 75.0	MHz	<u>-0.24 dB</u>	F18	400.0	MHz	- 95.5 dB
F9	(*) 100.0	MHz	<u>- 0.29 dB</u>	F19	500.0	MHz	-105.8 dB
F10	115.0	MHz	<u>- 0.32</u> dB	DA F20	1000.0	MHz	-101.6dB
			\sim .				

TEST PERFORMED BY: R. HOGGATT 5 DATE 121196

NOTE IF TEST WITNESSED BY AESD_____GSI_ this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

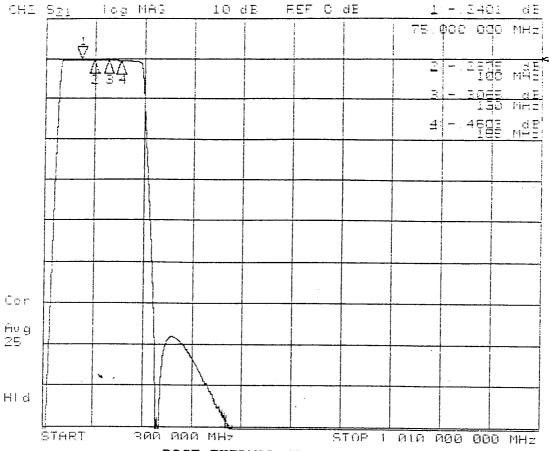
QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX E PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER QTP PARA 4.5.1.
- b.) INSERTION LOSS PER QTP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- (a.) OUT-OF-BAND REJECTION PER QTP PARA 4.5.5.

Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APEH.DOC	SHEET	11



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P231-002 AMBIENT

OPR: R. HOGGATT DATE 12 11 96 MARKER PARAMETERS

	_	on annier L
MARKER 1	75.000000 MHz OFF	75.000000 MHz 2401 dB
MARKER 2		100.000000 MHz 2875 dB
MARKER 3	130.000000 MHz OFF	130.000000 MHz 3065 dB
MARKER 4	155.000000 MHz OFF	155.000000 MHz 4603 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIBTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF

Channel 6 Bandpass Filter

IF Filter (S/N: 1331559-2, S/N: P228-014)

APPENDIX B	ALLEIADIV D
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ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 S/N_P228-014 AEROJET 1331559-2 REV.____

3.	0	dE	B	Α	N	D	W	/1	D	T	Н

3 Lt			
ACCEPTANCE TEST PROCEDURE	-10°C	+15°C	+40°C
63-0005-02 PARA 4 5 3			

{7} UPPER 3.0 dB BANDEDGE	(198.0-200.0)	19 <u>9.42</u> Mhz (198.0-200.0)	<u>99.05</u> MHz (1480.01500.0)
{8} LOWER 3.0 dB BANDEDGE	<u>9.22</u> MHz	9.21 Mhz	<u>9.20</u> MHz
	(8.0-10.0)	(8.0-10.0)	(8.0-10.0)
{9} 3.0 dB RELATIVE BANDWIDTH	<u>90,55</u> мHz	1 <u>90.21</u> Mhz	<u>89.85</u> MHz
	(188.0-192.0)	(188.0-192.0)	(188.0-192.0)

$\{10\}\ ADD\ \{7\}\ AND\ \{8\} \div 2 =$	1 <u>04.49</u> MHz	1 <u>04.32</u> MHz	1 <u>04.13</u> Mhz
	(105.0 NOM)	(105.0 NOM)	(105.0 NOM)

{10a} RECORD MEASURED TEMPERATURE	- <u>11.8 </u> ℃	+ <u>14 · 1 °</u> ℃	+ <u>43.8</u> ℃
	(-15.0 TO -10.0)	(12.5 TO 17.5)	(40.0 TO 45.0)
(6) ATTACH TRANSMISSION LOSS	(12)	1/1/2	/ 145
(b) ATTACH TRANSIMISSION LOSS	(\(\forall \)	(\(\forall \)	<u>(\dagger{\dagger}{)}</u>

PERFORMANCE X-Y PLOT

63-0005-02 PARA 4.5.4

PASSBAND RIPPLE			
ACCEPTANCE TEST PROCEDURE	-10°C	+15°C	+40°C

{11a} MIN INSERTION LOSS FREQ	19.91 MHz	19.91 Mhz	19.32 MHz
MIN INSERTION LOSS PERFORMANCE	E - 0,08 dB	- 0.08 dB	-0,08 dB

{11b} 75% BW LOWER BANDEDGE FREQ	1 <u>3.87</u> MHz	13.85 Mhz	1 <u>3.73</u> MHz
75% BW LOWER BANDEDGE I.L. PERF	-0.28 dB	-0.29 dB	-0,30 dB

	<u> </u>		<u>0,00</u>
{11c} 75% BW UPPER BANDEDGE FREQ	1 <u>56.37</u> MHz	15 <u>6.35</u> Mhz	156.23 MHz

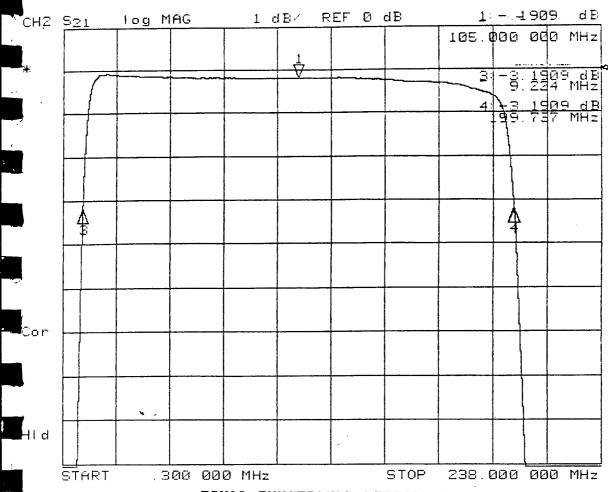
75% BW UPPER	BANDEDGE I.L. PERF	- <u>0.28</u> dB	- <u>().29</u> dB	- <u>0.30</u> dB

{11d} PERFORMANCE DELTA	0.20 dB	0.21 dB	0.22 dB
(I.L. @ {11b} - I.L. @ {11a})			

{11e} PERFORMANCE DELTA	0,20 dB	0.21 dB	0.22 dB
(@ {11c} - @ {11a})			<u> </u>

Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: ACAD/63/0502APBJ.DOC		SHEET	13



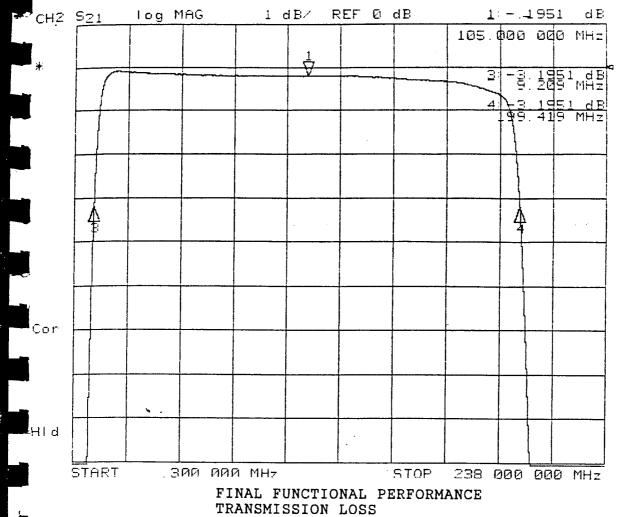
FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P228-014

-10C DATA

MARKER PARAME OPR: R. HOGGATT DATEDEC 3 0 1996 annel 2

MARKER 1	19.500000 MHz OFF	105.000000 MHz - 1909 dB
MARKER 2	190.500000 MHz OFF	104.480829 MHz OFF .
MARKER 3	33.750000 MHz OFF	9.224099 MHz -3.1909 dB
MARKER 4	176.250000 MHz OFF	199.737559 MHz -3.1909 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
PEEEDENCE MADVED	055	٥٢٦

REFERENCE MARKER OFF OFF PLACEMENT HARKER SEARCH CONTINUOUS CONTINUOUS OFF OFF TARGET VALUE -14 dB -3 dB MARKER WIDTH VALUE -3 dB -3 dB OFF OFF MARKER TRACKING OFF OFF

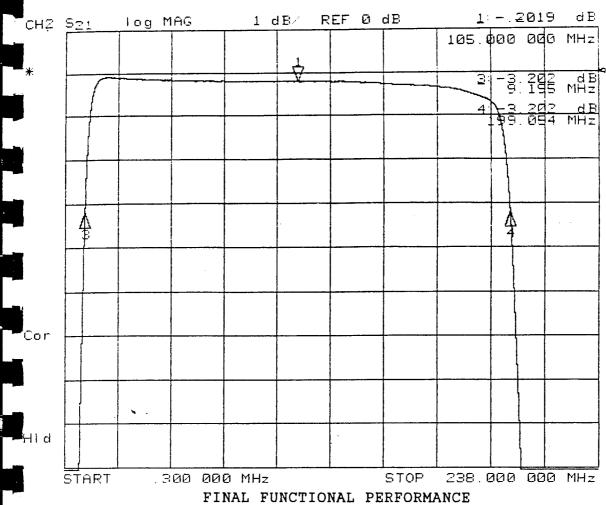


SERIAL NO. P228-014

+15C DATA

MARKER PARAMET OPR: R. HOGGATT DATE DEC 3 0 1996 annel 2

	MARKER 1	19.500000 MHz OFF	105.000000 MHz 1951 dB
	MARKER 2	190,500000 MHz OFF	104.314510 MHz OFF
	MARKER 3	33.750000 MHz OFF	9.209636 MHz -3.1951 dB
	MARKER 4	176.250000 MHz OFF	199 419384 MHz -3 1951 dB
	MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
	REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF
£	MARKER TRACKING	OFF	OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P228-014

+40C DATA

MARKER PARAMEI

MARKER TRACKING

OPR: R. HOGGATT DATE DEC 3 0 1996 annel 2

OFF

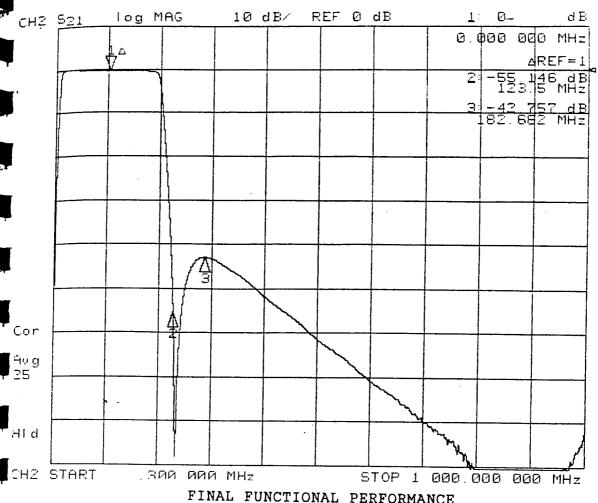
OFF

-n-i	OFR.	κ.	HOGGATT	DAIE				
	MARKER 1		19.50 OFF	30000	MHz	105. 2019	.000000 3 dB	MHz
	MARKER 2		190.50 OFF	30000	MHz	104. OFF	125434	MHz
	MARKER 3		33.79 OFF	50000	MHz	9. -3.202	195926 2 dB	MHz
	MARKER 4		176.25 OFF	50000		199. -3.202		MHz
	MKR STIMULUS OFFSET		0.00 0 dB	30000		89. -3.234	425802 42 dB	MHz
	REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE		OFF CONTINUO OFF -14 dB -3 dB	ous		OFF CONTIN OFF -3 dB	NUOUS	

OFF

APPENDIX B ACCEPTANCE TEST REPORT BANDPASS FILTER MODEL HL105-190-10SS1 S/N PZZS-C14 AEROJET 1331559-2 REV. だ。 PASSBAND RIPPLE (CON'T) (PASS)FAIL {11f} RECORD PASS/FAIL (0.5 dB MAX) (PASS)FAIL (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** ACCEPTANCE TEST PROCEDURE -10°C +15°C +40°C 63-0005-02 PARA 4.5.5 Fc=105.0 MHz. REF (5A) FOR INSERTION LOSS @ Fc -59.3 dB - 59.4 dB {12} WORST CASE REJECTION FROM -59.3 dB 0.300 MHz TO 1.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13a} WORST CASE REJECTION FROM -42.8 dB -42.8 dB -42.8 dB (40.0 dB MIN) 228.5 MHz TO 1000.0 MHz (40.0 dB MIN) (40.0 dB MIN) {13c} RECORD MEASURED TEMPERATURE -11.8 °C +14.5 °C +44.0°C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) {14} ATTACH REJECTION PERFORMANCE X-Y PLOT(S) TEST PERFORMED BY C. HOGGOTT DATE 12/30/96 Not witnessed NOTE IF TEST WITNESSED BY AESD: _____ GSI: _ this time. DLD ***** END OF FUNCTIONAL PERFORMANCE TEST **** **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION** {16} REFERENCE CUSTOMER DRAWING 1331559 **DESCRIPTION OF** DIMENSION AND ACTUAL **MEASUREMENT** TOLERANCE **MEASUREMENT OVER ALL LENGTH** $3.50 \pm .03$ 3.500 MOUNTING HOLE CENTER $0.125 \pm .010$ 0.126 BETWEEN UPPER MOUNTING HOLES 3.250 3.250 BETWEEN LOWER MOUNTING HOLES 3.250 3.250

pared in accordance with MIL-STD-100				
CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE. AC	AD/63/0502APBJ.DOC	SHEET	14



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P228-014 -10C DATA

MARKER PARAMET

MARKER WIDTH VALUE

MARKER TRACKING

-3 dB

-3 dB

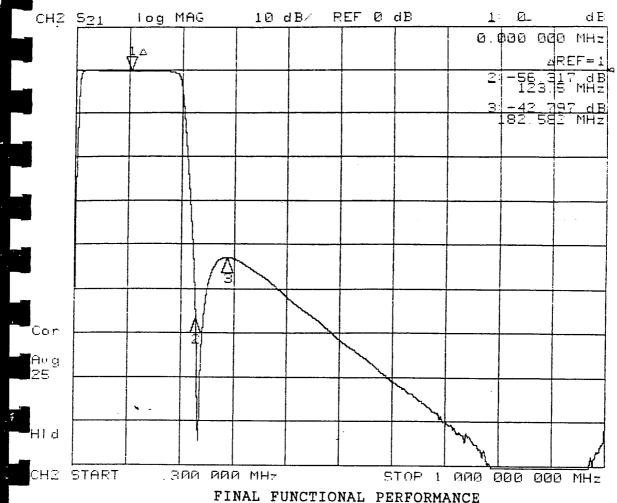
OFF

OFF

PHRKER	PHRHME	OPR:	R.	HOGG	ATT	DATE	120 3 0	_1996 a	innel	2	
MARKER	1			OFF	1.0	a <u>0</u> 000	MHz		05.00 dB	30000	MHz
MARKER:	2			OFF	5.00	30000	MHz		28.50 .146	dB dB	MHz
MARKER	3			OFF	5.00	300 0 0	MHz		87.68 .757	32242 dB	MHz
MARKER	4			OFF	5.00	30000	MHz	OFF		1000 M	1Hz
MKR STI	MULUS OFFSE	Τ		Øc		90000	MHz	Q,	0.00 dB	10000	MHz
REFEREN LACEME MARKER TARGET	SEARCH			OFF CONT OFF	INUC	າມຣ					

-3 dB

OFF



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P228-014

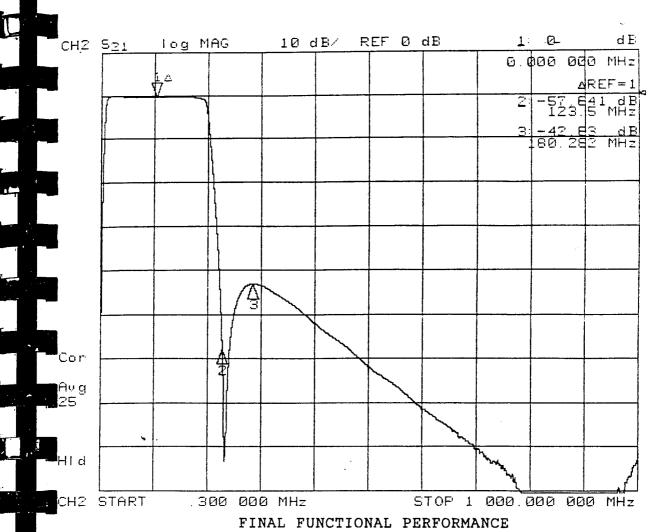
+15C DATA

MARKER TRACKING

MARKER PARAMET OPR: R. HOGGATT DATE DEC 3 0 1996 June 2

MARKER 1	1.000000 MHz OFF	105.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	228.500000 MHz -56.317 dB
MARKER 3	5.000000 MHz OFF	287.582272 MHz -42.797 dB
MARKER 4	5 000000 MHz OFF	.300000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF
MADKED TRACKING		- · ·

OFF



REJECTION PERFORMANCE

SERIAL NO. P228-014

+40C DATA

MARKER SEARCH

MARKER TRACKING

MARKER WIDTH VALUE

TARGET VALUE

OPR: R. HOGGATT DATE DEC 3 0 1996 annel 2 MARKER PARAMET

MARKER 1	1.000000 MHz OFF	105.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	228.500000 MHz -57.641 dB
MARKER 3	5.000000 MHz Off	285.282962 MHz -42.83 dB
MARKER 4	5.000000 MHz OFF	300000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH	OFF CONTINUOUS OFF	MARKER 1 CONTINUOUS

OFF

-3 dB

-3 dB

OFF

OFF

OFF

-3 dB

-3 dB

OFF

APPENDIX B

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 S/N PZ25 - O14 AEROJET 1331559-2 REV.

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +22.9 °C (+19°C TO +29.0°C)

(15) ATTACH PASSBAND PERFORMANCE X-Y PLOT

<u></u>(1)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-84.1 dB	F11	(*) 130.0	MHz	-0.19 dB
F2	1.0	MHz	- 67.0 dB	F12	(*) 150.0	MHz	-0.29 dB
F3	5.0	MHz	-17.9 dB	F13	180.0	MHz	-0.45 dB
F4	7.5	MHz	-7.52 dB	F14	190.0	MHz	
F5	10.0	MHz	-1.87 dB	F15	200.0	MHz	- <u>0.65</u> dB
F6	20.0	MHz	-0.0% dB	F16	250.0	MHz	-3.81 dB
F7	40.0	MHz	-0.11 dB	F17	300.0	MHz	- <u>50.0</u> dB
F8	(*) 60.0	MHz	-0.17 dB	F18	400.0		<u>-43.3</u> dB
F9	(*) 80.0	MHz	-0.20 dB/	F19		MHz	<u>-51.8</u> dB
F10	105.0	MHz	-0.20 dB (DA)		500.0	MHz	<u>- (ه۱. ل</u> dB
•		1711 12	up	F20	1000.0	MHz	<u>-83.4</u> dB
TEAT :					1 1		

TEST PERFORMED BY: 1 1066 ATT DATE 12/27/46

NOTE IF TEST WITNESSED BY AESD_____ GSI__ Not witnessed this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

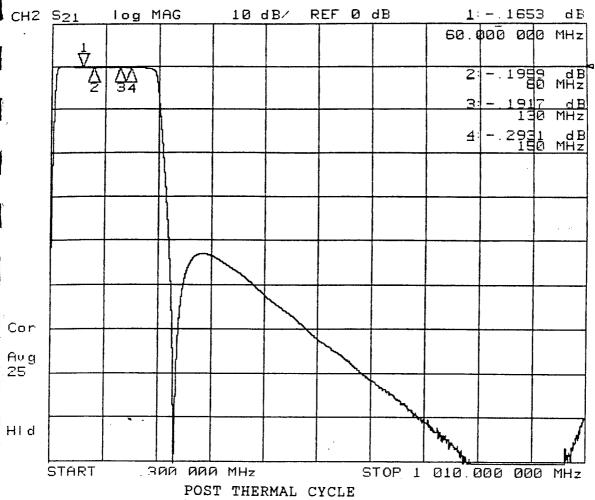
FUNCTIONAL PERFORMANCE TEST

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX B PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: ACAD/63/0502APBJ.DOC		SHEET	11



PASSBAND CHARACTERISTICS SERIAL NO. P228-014

AMBIENT

MARKER PARAME OPR: R. HOGGATT DATE DEC 27 1996 Januari 2

MARKER 1	17.750000 MHz OFF	60.000000 MHz 1653 dB
MARKER 2	157.250000 MHz OFF	80.000000 MHz 1959 dB
MARKER 3	29.375000 MHz OFF	130.000000 MHz 1917 dB
MARKER 4	145.625000 MHz OFF	150 000000 MHz - 2931 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB	OFF CONTINUOUS OFF -3 dB -3 dB

-3 dB OFF

OFF

MARKER TRACKING

OFF

Channel 7 Bandpass Filter

IF Filter (S/N: 1331559-2, S/N: P228-015)

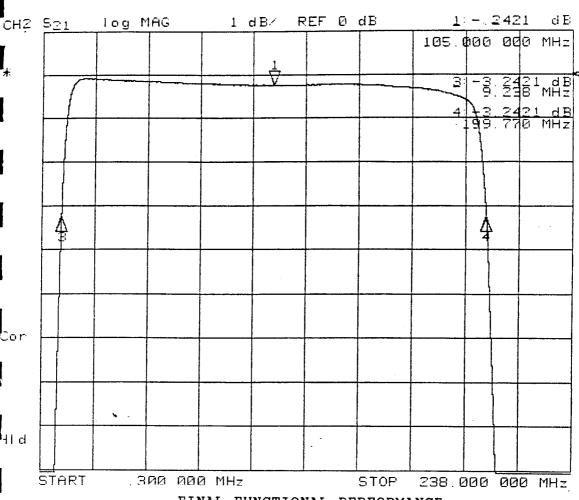
ADEN		A	57032	DWG. NO. 63-0005-02	REV.
repared in a	accordance with MIL-STD-100	SIZE	CAGE CODE	DIA/O AIG	
{11e}	PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})		<u>0.19</u> dB	0.20 dB	<u>O.2 1</u> dB
{11d}	PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})		<u>0.19</u> dB	<u>0.20</u> dB	<u>0.21</u> dB
	75% BW UPPER BANDEDGE	I.L. PER	F <u>-0.77</u> dB	- <u>0.28</u> dB	- <u>0.29</u> dB
{11c}	75% BW UPPER BANDEDGE I	FREQ	1 <u>56.65</u> MHz	15 <u>6.56</u> Mhz	15 <u>6.46</u> MHz
	75% BW LOWER BANDEDGE	I.L. PEF	RF - <u>0.27</u> dB	- <u>0.28</u> dB	- <u>0.29</u> dB
{11b}	75% BW LOWER BANDEDGE	FREQ	14.15 MHz	14.06 Mhz	13.96 MHz
	MIN INSERTION LOSS PERF	ORMAN	CE <u>-0.08</u> dB	<u>- 0.08</u> dB	- <u>0.08</u> dB
{11a}	MIN INSERTION LOSS FREQ		<u>19.91</u> MHz	<u>20.50</u> Mhz	19.91 MHz
ACC	BBAND RIPPLE EPTANCE TEST PROCEDURE 005-02 PARA 4.5.4		-10°C	+15°C	+40°C
	TTACH TRANSMIŠSION LOSS FORMANCE X-Y PLOT		<u>√</u> (√)	(\forall)	<u>/</u> (\(\forall \)
{10a}	RECORD MEASURED TEMPE	RATURE	= - <u> 1.7</u> °C (-15.0 TO -10.0)		+ <u>५५.०</u> °C (40.0 TO 45.0)
{10}	ADD {7} AND {8} ÷ 2 =		1 <u>04.51</u> MHz (105.0 NOM)	1 <u>04.34</u> MHz (105.0 NOM)	10 <u>4.17</u> Mhz (105.0 NOM)
{9} 3	.0 dB RELATIVE BANDWIDTH		1 <u>40.53</u> MHz (188.0-192.0)	1 <u>90.24</u> Mhz (188.0-192.0)	18 <u>9.91</u> MHz (188.0-192.0)
{8} L	OWER 3.0 dB BANDEDGE		<u>9.24 MHz</u> (8.0-10.0)	<u>9.22</u> Mhz (8.0-10.0)	<u>9.2 </u> MHz (8.0-10.0)
{7} L	JPPER 3.0 dB BANDEDGE		1 <u>99.77</u> MHz (198.0-200.0)	1 <u>99.46</u> Mhz (198.0-200.0)	1 <u>99.12</u> MHz (1480.01500.0)
ACC	B BANDWIDTH EPTANCE TEST PROCEDURE 005-02 PARA 4.5.3		-10°C	+15°C	+40°C
	IDPASS FILTER MODEL HL105 OJET 1331559-2 REV.	-190-105	SS1 S/N P228-C	315	
APF	PENDIX B AG	CCEPTA	NCE TEST REPO	RI	

FILE: ACAD/63/0502APBJ.DOC

SHEET

13

DADEN-ANTHONY ASSOCIATES INC.



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS

SERIAL NO. P228-015

-10C DATA

TARGET VALUE

MARKER TRACKING

MARKER WIDTH VALUE

MARKER PARAMET OPR: R. HOGGATT DATE DEC 3 0 1996 annel 2

MARKER 1	19.500000 MHz OFF	105.000000 MHz 2421 dB
1ARKER 2	190.500000 MHz OFF	104.504578 MHz OFF
MARKER 3	33.750000 MHz OFF	9.238843 MHz -3.2421 dB
ARKER 4	176.250000 MHz OFF	199.770313 MHz -3.2421 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH	OFF CONTINUOUS OFF	OFF CONTINUOUS OFF

-14 dB

-3 dB

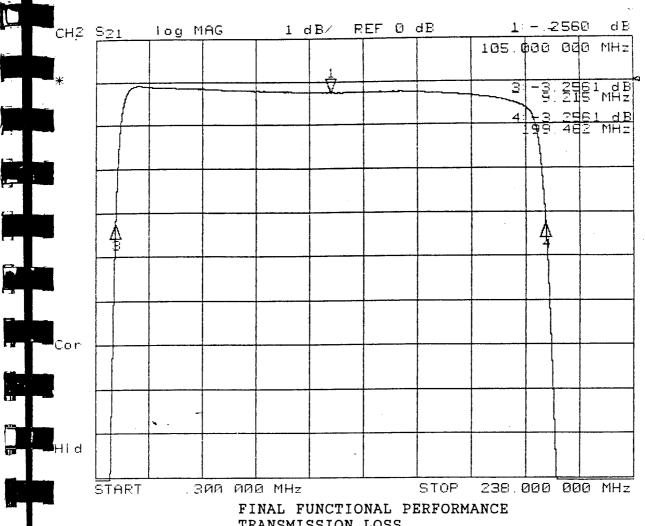
OFF

OFF

-3 dB

-3 dB

OFF



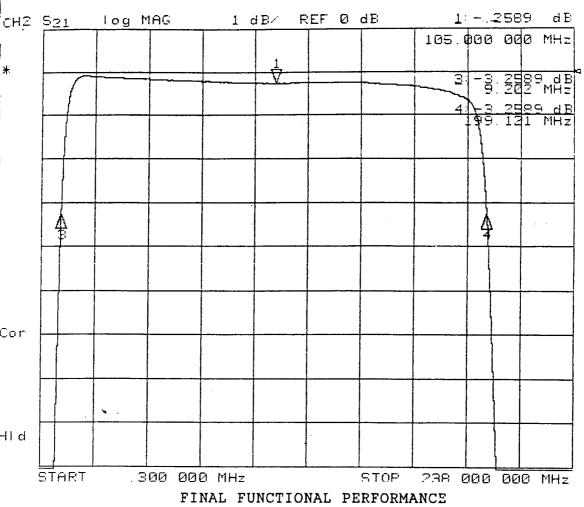
TRANSMISSION LOSS

SERIAL NO. P228-015

+15C DATA

OPR: R. HOGGATT DATE DEC 3 0 1996 annel 2 MARKER PARAMET

	MARKER 1	19.500000 MHz OFF	105.000000 MHz 2560 dB
5	MARKER 2	190.500000 MHz OFF	104.338593 MHz OFF
	MARKER 3	33.750000 MHz OFF	9.215012 MHz -3.2561 dB
	MARKER 4	176.250000 MHz OFF	199.462174 MHz -3.2561 dB
	MKR STIMULUS OFFSET .	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
	REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB	OFF CONTINUOUS OFF -3 dB -3 dB
	MARKER TRACKING	OFF OFF	OFF OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P228-015

+40C DATA

MARKER PARAMET

MARKER TRACKING

OPR: R. HOGGATT DATE DEC 3 0 1996 annel 2

OFF

OFF

MARKER 1	19.500000 MHz OFF	105.000000 MHz 2589 dB
MARKER 2	190.500000 MHz OFF	104.162185 MHz OFF
MARKER 3	33.750000 MHz OFF	9.202529 MHz -3.2589 dB
MARKER 4	176.250000 MHz OFF	199.121842 MHz -3.2589 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB	OFF CONTINUOUS OFF -3 dB -3 dB

OFF

APPENDIX B **ACCEPTANCE TEST REPORT** BANDPASS FILTER MODEL HL105-190-10SS1 S/N P228-015 **AEROJET 1331559-2 REV.** ∓ PASSBAND RIPPLE (CON'T) {11f} RECORD PASS/FAIL (0.5 dB MAX) PASS)FAIL (PASS)FAIL PASS)FAIL (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** ACCEPTANCE TEST PROCEDURE -10°C +15°C +40°C 63-0005-02 PARA 4.5.5 Fc=105.0 MHz. REF (5A) FOR INSERTION LOSS @ Fc {12} WORST CASE REJECTION FROM -59.3 dB -59.4 dB -59.3 dB 0.300 MHz TO 1.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13a} WORST CASE REJECTION FROM -42.6 dB -42.6 dB -42.7 dB 228.5 MHz TO 1000.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13c} RECORD MEASURED TEMPERATURE ℃ طا.اا-+14.4 °C +44.0°C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) **{14} ATTACH REJECTION PERFORMANCE** X-Y PLOT(S) TEST PERFORMED BY R 1-106GAN DATE 12/30/40 Not witnessed NOTE IF TEST WITNESSED BY AESD: _____ GSI: _ this time. DLD ***** END OF FUNCTIONAL PERFORMANCE TEST **** **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION** {16} REFERENCE CUSTOMER DRAWING 1331559 **DESCRIPTION OF** DIMENSION AND **ACTUAL** MEASUREMENT TOLERANCE MEASUREMENT OVER ALL LENGTH $3.50 \pm .03$ 3.500 MOUNTING HOLE CENTER $0.125 \pm .010$ 0.126 BETWEEN UPPER MOUNTING HOLFS 3.250 3.250 BETWEEN LOWER MOUNTING HOLES 3.250 3.250 Prepared in accordance with MIL-STD-100 CONTRACT NO. SIZE CAGE CODE DWG. NO.

57032

FILE. ACAD/63/0502APBJ.DOC

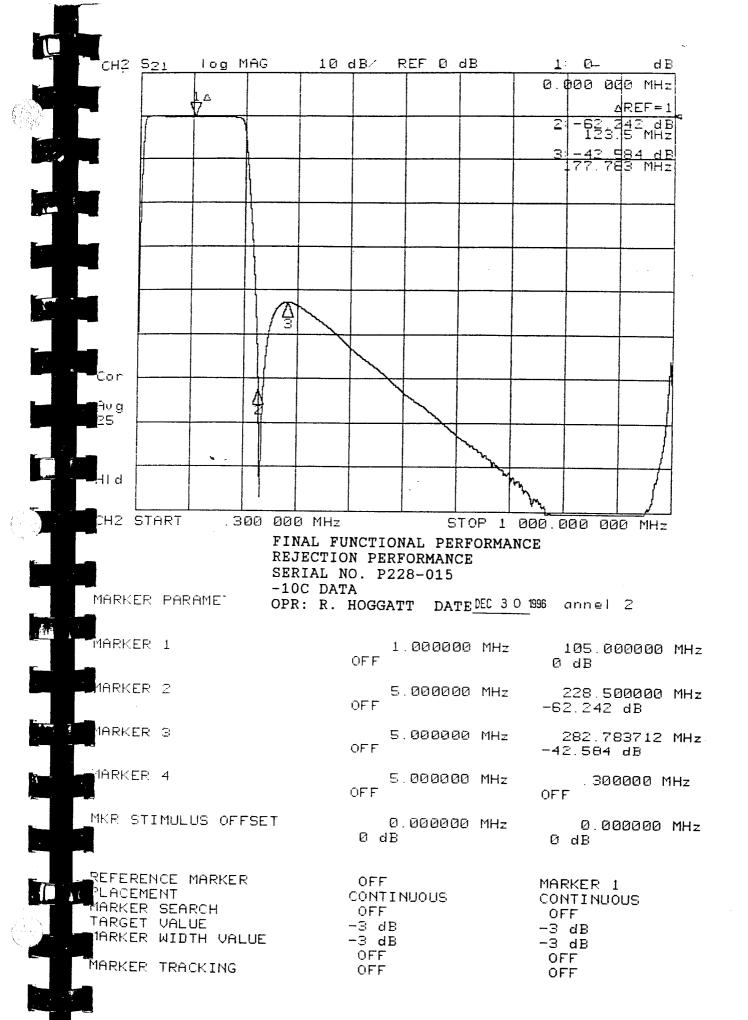
DADEN-ANTHONY ASSOCIATES INC.

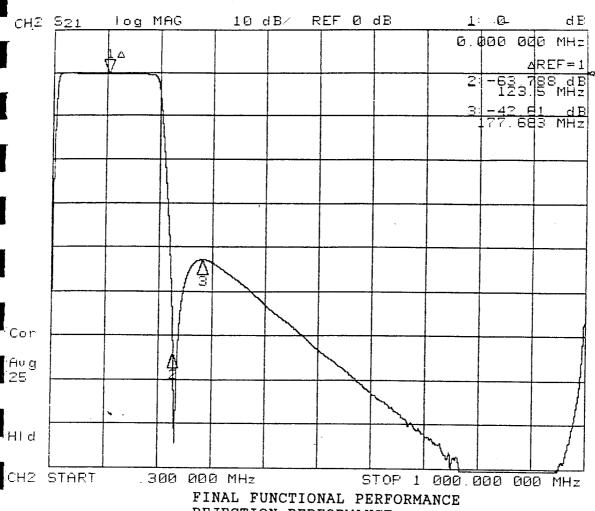
63-0005-02

SHEET

REV.

14





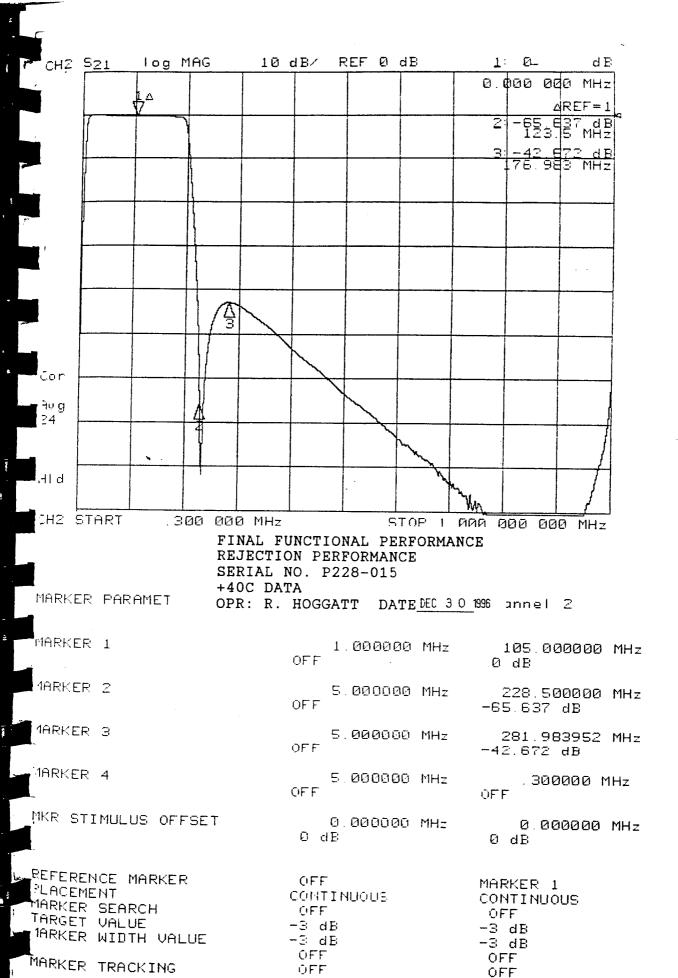
FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P228-015

+15C DATA

MARKER PARAMET OPR: R. HOGGATT DATE DEC 3 0 1996 annel 2

MARKER 1	1.000000 MHz OFF	105.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	228.500000 MHz -63.788 dB
MARKER 3	5.000000 MHz OFF	282.683742 MHz -42.61 dB
MARKER 4	5.000000 MHz OFF	.300000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT	OFF CONTINUOUS	MARKER 1

CONTINUOUS CONTINUOUS MARKER SEARCH OFF OFF TARGET VALUE -3 dB -3 dB MARKER WIDTH VALUE -3 dB -3 dB OFF OFF MARKER TRACKING OFF OFF



APPENDIX B

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 S/N PZZS -OIS AEROJET 1331559-2 REV. TV

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +27.7 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

<u>~</u>(√)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE		REF	FREQ	UNIT	VALUE
F1	0.5	MHz	<u>-83.3 dB</u>		F11	(*) 130.0	MHz	-0.24 dB
F2	1.0	MHz	d <u>B ما. ماها -</u>		F12	(*) 150.0	MHz	-0.26 dB
F3	5.0	MHz	<u>- 17.9 dB</u>		F13	180.0	MHz	-0.42 dB
F4	7.5	MHz	<u>-7.59</u> dB		F14	190.0	MHz	<u>- 0.60 dB</u>
F5	10.0	MHz	<u>-1.92</u> dB		F15	200.0	MHz	-3.85 dB
F6	20.0	MHz	<u>-0.08</u> dB		F16	250.0	MHz	-48.0 dB
F7	40.0	MḤz	<u>-0.10</u> dB		F17	300.0	MHz	-43.6 dB
F8	(*) 60.0	MHz	<u>-0.17</u> dB		F18	400.0	MHz	-53.1 dB
F9	(*) 80.0	MHz	<u>-0.23</u> dB	_	F19	500.0	MHz	-63.3 dB
F10	105.0	MHz	-0.25 dB	DA	F20	1000.0	MHz	- <u>5%.</u> 8 dB

TEST PERFORMED BY: R. HOGGATT DATE 12/27/96

NOTE IF TEST WITNESSED BY AESD_____ GSI_ this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

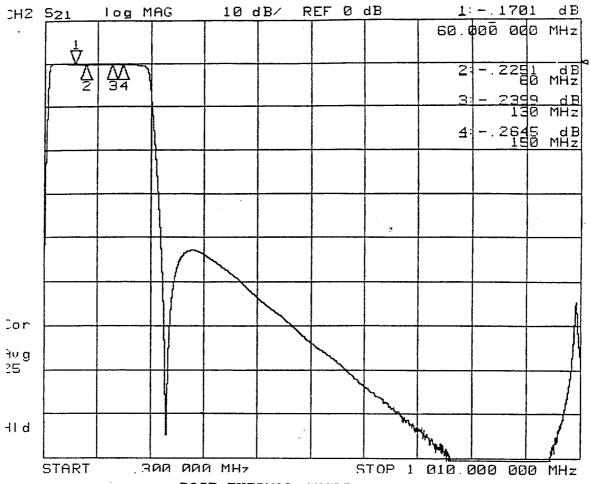
ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX B PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: ACAD/63/0502APBJ.DOC		SHEET	11



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P228-015 AMBIENT

MARKER PARAME.

OPR: R. HOGGATT DATE DEC 27 1996 annel 2

1ARKER 1	17.750000 MHz OFF	60.000000 MHz 1701 dB
MARKER 2	157.250000 MHz OFF	80.000000 MHz 2251 dB
MARKER 3	29.375000 MHz OFF	130.000000 MHz 2399 dB
MARKER 4	145.625000 MHz OFF	150.000000 MHz 2645 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF
MARKER TRACKING	OFF	OFF

Channel 8 Bandpass Filter

IF Filter (S/N: 1331559-4, S/N: P230-004)

		•		
	APPENDIX D QUALIFICA	TION TEST REPO	ORT	
1	BANDPASS FILTER MODEL HL87.5-155-10S	s1 s/n <u>P230</u> -	004	
	3.0 dB BAND WIDTH QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.3	-10°C	+15°C	+40°C
	(7) UPPER 3.0 GB BANDEDGE	1 <u>64.21</u> MHz (163.0-165.0)	1 <u>63.96</u> Mhz (163.0-165.0)	1 <u>63.67</u> MHz (163.0-165.0)
	(8) LOWER 3 0 aB BANDEDGE	9.14 MHz (8.0-10.0)	9.12 Mhz (8.0-10.0)	9.11 MHz (8.0-10.0)
	(9) 3.0 dB RELATIVE BANDWIDTH	1 <u>55.07</u> MHz (153.0-157.0)	1 <u>54.84</u> Mhz (153.0-157.0)	1 <u>54.56</u> MHz (153.0-157.0)
	{10} ADD {7} AND {8} ÷ 2 =	<u>86.68</u> MHz (87.5 NOM)	86.54 MHz (87.5 NOM)	<u>%.39 </u>
	(10a) RECORD MEASURED TEMPERATURE	- <u>II.4</u> °C (-15.0 TO -10.0)		+ <u>47.9</u> °C (40.0 TO 45.0)
	(6) ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	<u>√</u> (√)	(1)	(√)
i	PASSBAND RIPPLE QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.4	-10°C	+15°C	+40°C
	{11a} MIN INSERTION LOSS FREQ	<u>19.27</u> MHz	19.27 Mhz	14.27 MHz
	MIN INSERTION LOSS PERFORMANC	E <u>-0.10</u> dB	- <u>O.1O_</u> dB	- <u>(),(()</u> dB
	{11b} 75% BW LOWER BANDEDGE FREQ	13.14 MHz	13.03 Mhz	17.92 MHz
	75% BW LOWER BANDEDGE I.L. PERF	- <u>035_</u> dB	- <u>0,38</u> dB	<u>-040</u> dв
	{11c} 75% BW UPPER BANDEDGE FREQ	1 <u>29,39</u> MHz	1 <u>29.28</u> Mhz	12 <u>9.17</u> MHz
	75% BW UPPER BANDEDGE I.L. PERF	- <u>0.35</u> dB	- <u>0.38</u> dB	- <u>О.ЧО</u> dВ
	{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	<u>0.25</u> dB	<u>0.28</u> dB	<u>0,30</u> dB
	{11e} PERFORMANCE DELTA (I.L. @ [11c] - I.L. @ {11a})	<u>O.25</u> dB	0.28 dB	<u>0.30</u> dB

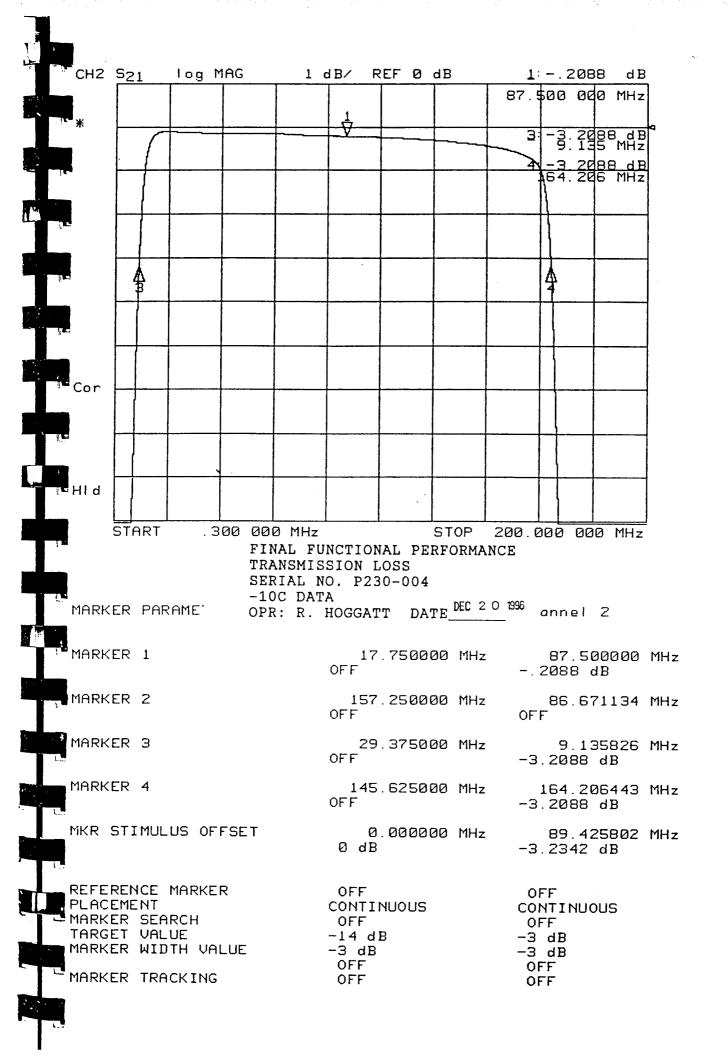
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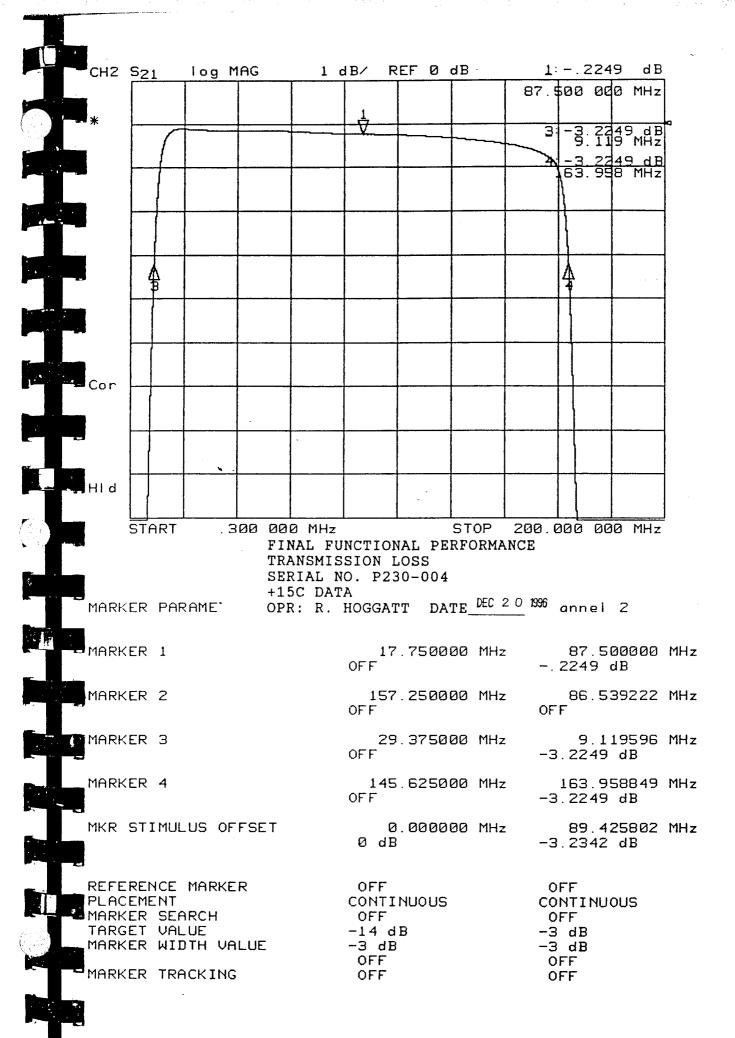
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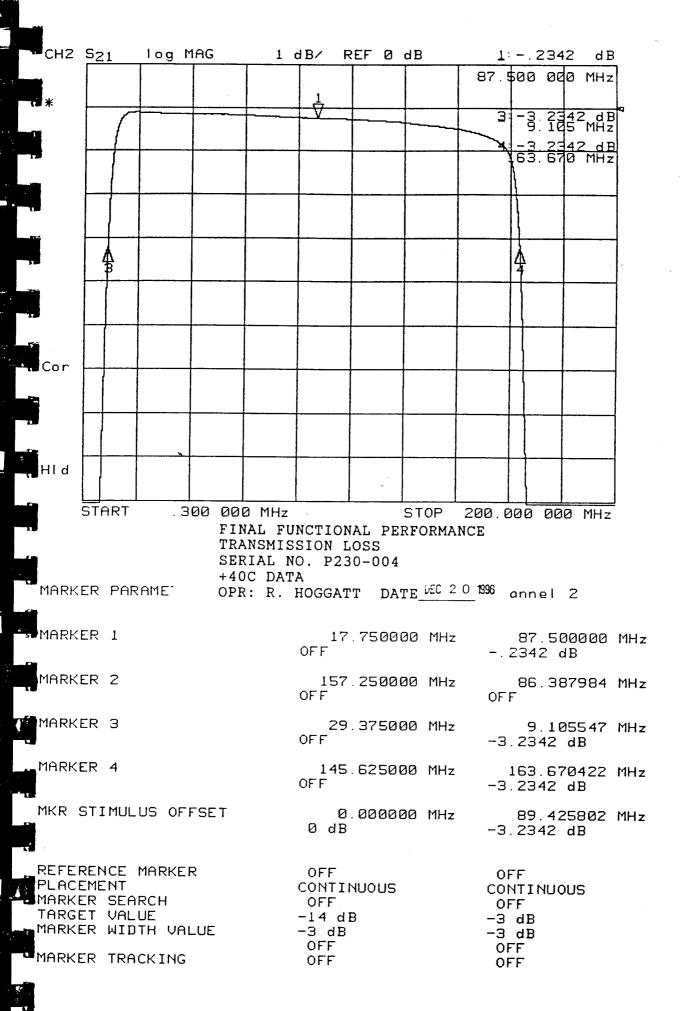
3.4 19.4

42.4%

repared in accomfance with MIL-STD-100				
CONTRACT NO.	SIZE CAGE CODE		DWG. NO.	REV.
	Α	57032	63-0005-010	Н
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APDH.DOC	SHEET	12



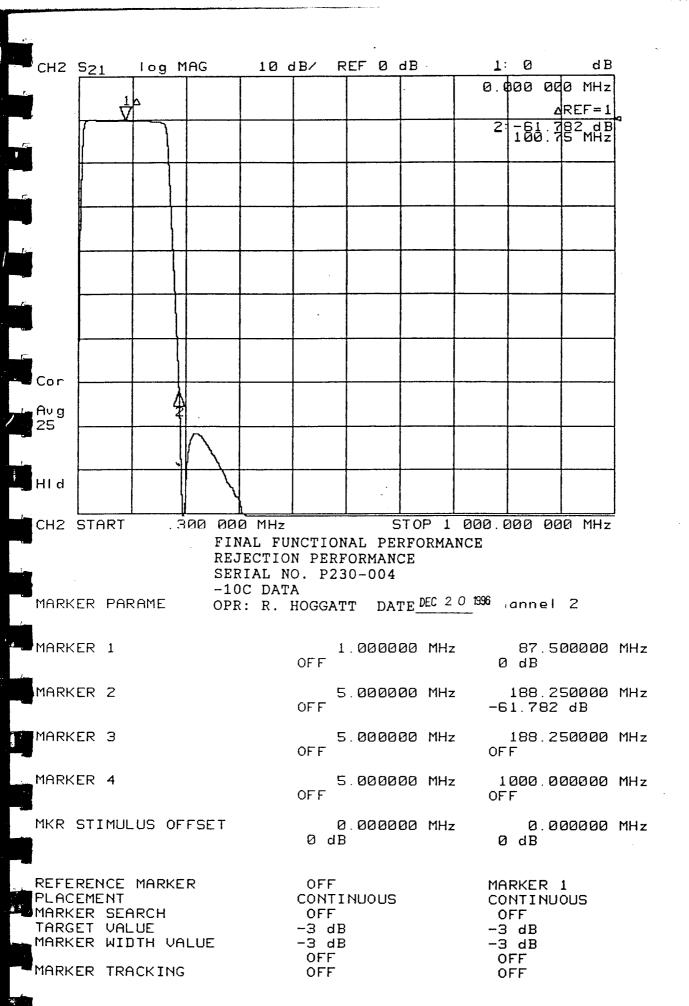


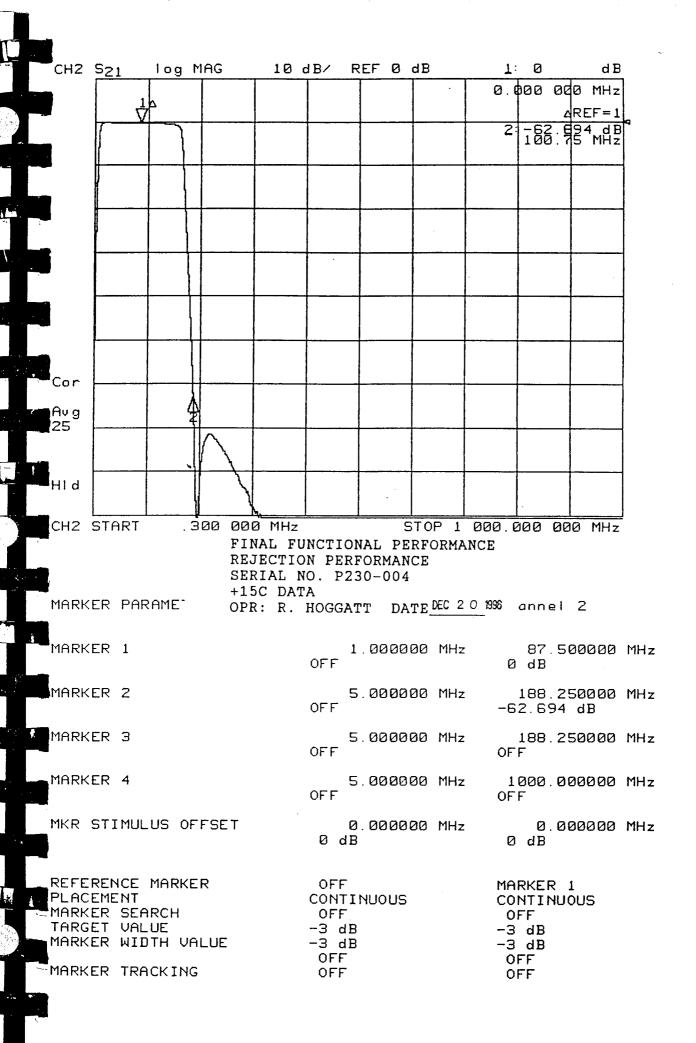


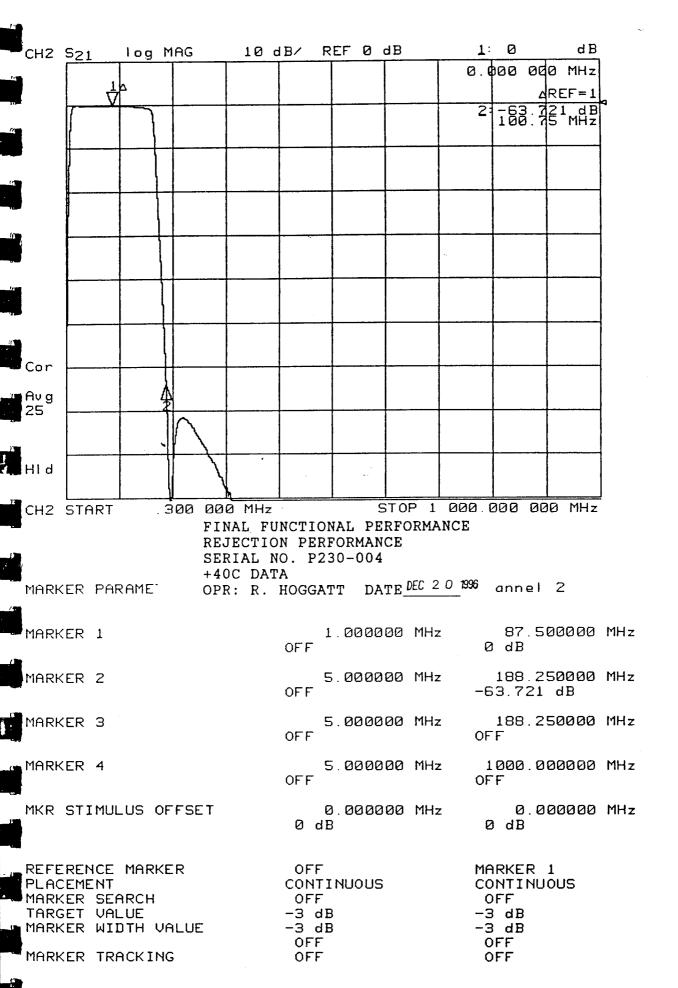
APPENDIX D **QUALIFICATION TEST REPORT** BANDPASS FILTER MODEL HL87.5-155-10881 S/N P230-004 AEROJET 1331559-4 REV. PASSBAND RIPPLE (CON'T) {11f} RECORD PASS/FAIL (0.5 dB MAX) (PASS)FAIL (PASS)FAIL (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** QUALIFICATION TEST PROCEDURE -10°C +15°C +40°C 63-0005-010 PARA 4.5.5 Fc=87.5 MHz. REF (5A) FOR INSERTION LOSS @ Fc {12} WORST CASE REJECTION FROM -60.5 dB -60.4 dB -60.4 dB 0.300 MHz TO 1 0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13a} WORST CASE REJECTION FROM -61.8 dB -62.7 dB -63.7 dB 188.25 MHz TO 1000.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) +42.9 °C {13c} RECORD MEASURED TEMPERATURE -11.6°°C +13.7 °C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) (14) ATTACH REJECTION PERFORMANCE X-Y PLOT(S) DATE 12/20/96 Not witnessed NOTE IF TEST WITNESSED BY AESD: _____ GSI: this time. DLD ***** END OF FUNCTIONAL PERFORMANCE TEST **** **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION** {16} REFERENCE CUSTOMER DRAWING 1331559 DESCRIPTION OF T

MEASUREMENT	TOLERANCE	ACTUAL MEASUREMENT
OVER ALL LENGTH	3.50 ± .03	3.501
MOUNTING HOLE CENTER	0.125 <u>+</u> .010	0.125
BETWEEN UPPER MOUNTING HOLES	3.250	3.250
BETWEEN LOWER MOUNTING HOLES	3.250	3250

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APDH.DOC	SHEET	13







APPENDIX D

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL87.5-155-10SS1 S/N P230- CG4 AEROJET 1331559-4 REV.

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. + 72.9 °C (+19°C TO +29.0°C)

(15) ATTACH PASSBAND PERFORMANCE X-Y PLOT

 $\sqrt{(1)}$

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE		REF	FREQ	UNIT	VALUE
F1	<u>?</u> 5	MHz	<u>-84.2 dB</u>		F11	(*) 100.0	MHz	-0.24 dB
F2	i.0	MHz	<u>-67.ს_</u> dB		F12	(*) 125.0	MHz	- 0.34 dB
F3	€ 0	MHz	<u>- 18.5</u> dB		F13	150.0	MHz	- 0.60 dB
F4	⁻ .5	MHz	<u>- 7.57 dB</u>		F14	160.0	MHz	-1.09 dB
F5	10.0	MHz	<u>-1.76</u> dB		F15	165.0	MHz	-4.72 dB
F6	15.0	MHz	<u>-0.21</u> dB		F16	170.0	MHz	-15.92dB
F7	25.0	МНz	<u>-0.11</u> dB		F17	200.0	MHz	<u>-86.4</u> dB
F8	(*) 50 0	MHz	<u>-0.16</u> dB		F18	300.0	MHz	<u>- ४६.3</u> dB
F9	(*) 75.0	MHz	<u>-0.21</u> dB	•	F19	500.0	MHz	- 106.0 dB
F10	97. 5	MHz	- <u>0,26 dB</u>		F20	1000.0	MHz	<u>- 124.9</u> dB
				/ r				

TEST PERFERMED BY: 12 1066ATT DATE 12/20/9C

NOTE IF TEST ITNESSED BY AESD GSI this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

QUALIFICATION: TEST PROCEDURE

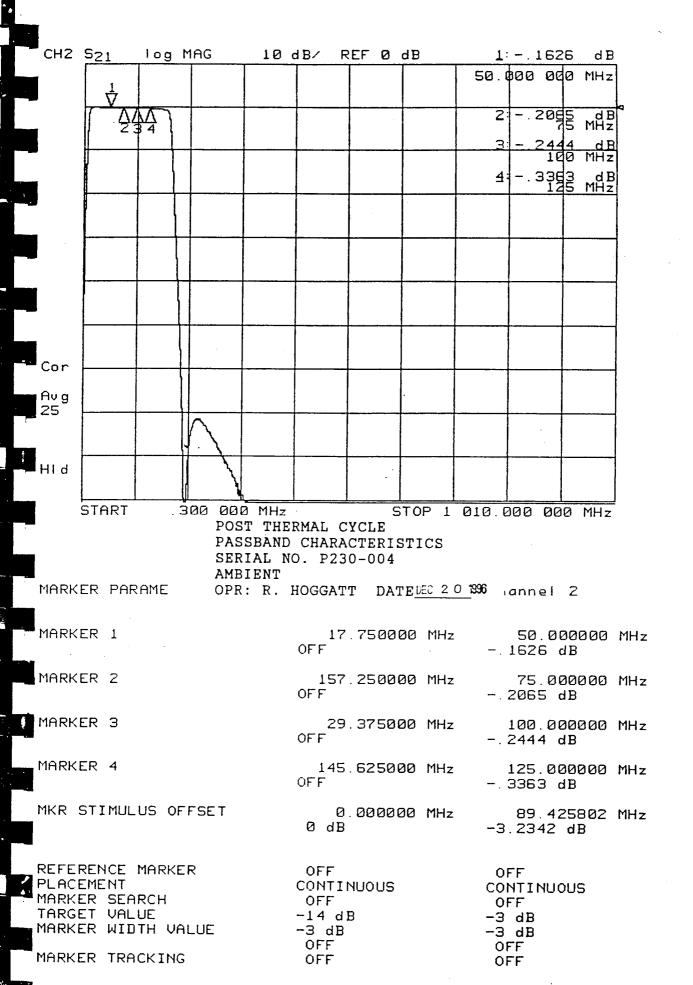
63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX D PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- b.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
- c.) OUT-OF-BAND REJECTION PER QTP PARA 4.5.5.
- d) INSERTION LOSS PER QTP PARA 4.5.2
- e) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) VSWR PER QTP PARA 4.5.1.

Prepared in accordance a ** MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APDH.DOC	SHEET	10

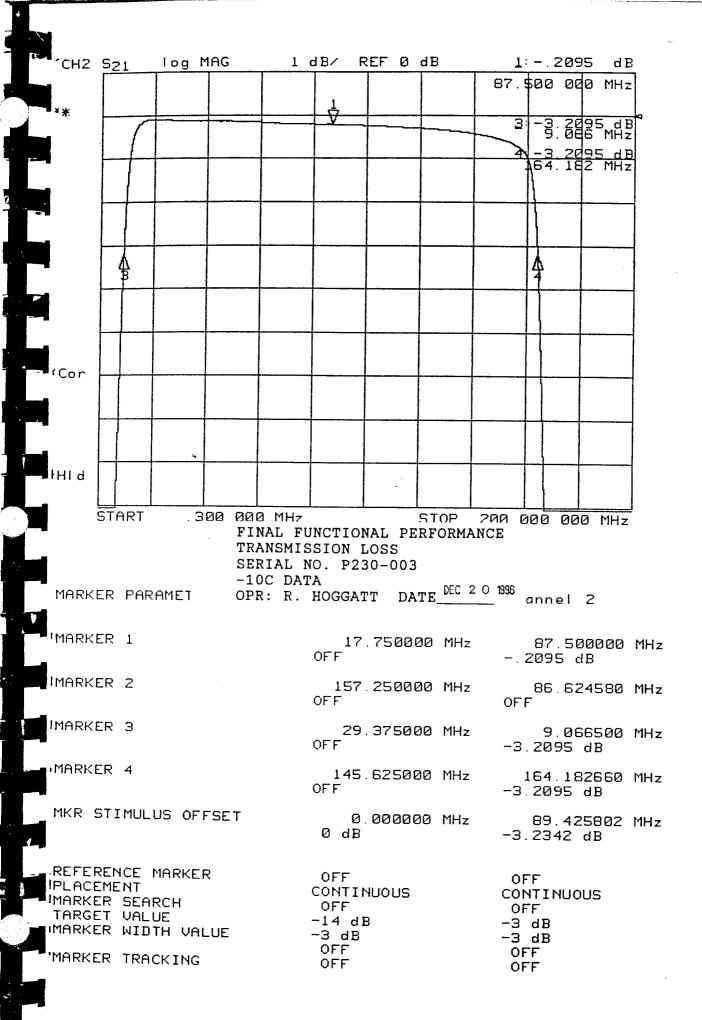


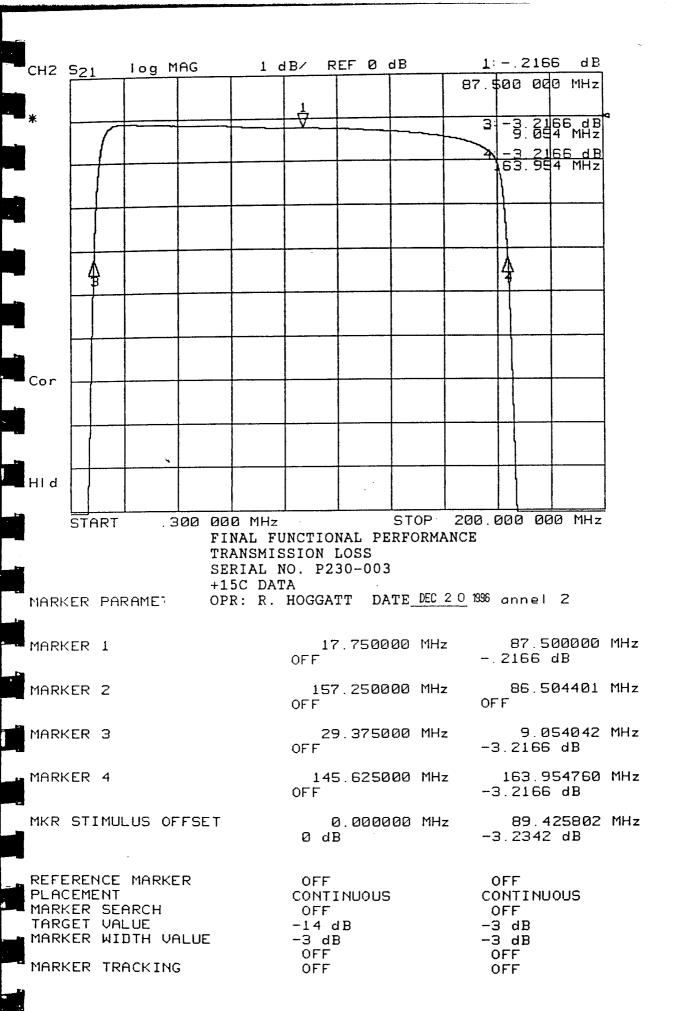
Channel 9 Bandpass Filter

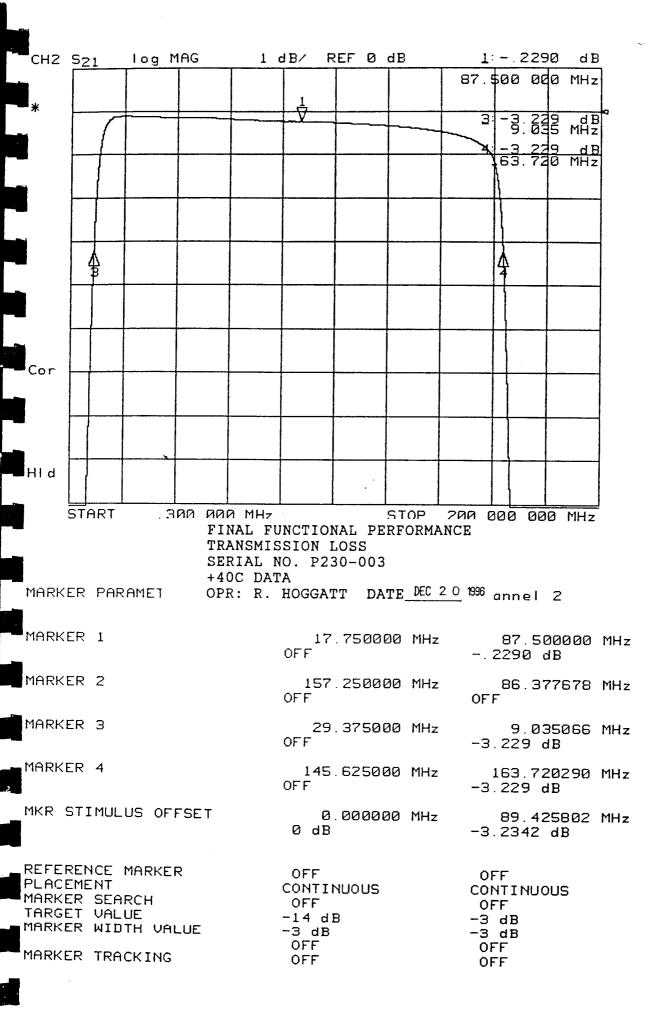
IF Filter (S/N: 1331559-4, S/N: P230-003)

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APPENDIX D	QUALIFICATION TEST REP	PORT	
BANDPASS FILTER MODEL HLE AEROJET 133:159-4 REV.	87.5-155-10SS1 S/N <u>P23C</u> —-	<u>·</u> 003	
3.0 dB BANDWIDTH QUALIFICATION TEST PROCED 63-0005-010 PARA 4.5.3	DURE -10°C	+15°C	+40°C
{7} UPPER 3.3 a3 BANDEDGE	ا <u>ل، ۱۷ M</u> Hz (163.0-165.0)	1 <u>63.95</u> Mhz (163.0-165.0)	16 <u>3.72</u> MHz (163.0-165.0)
(8) LOWER 3 Club BANDEDGE	9.07 MHz (8.0-10.0)	9.05 Mhz (8.0-10.0)	9.04_MHz (8.0-10.0)
(9) 3.0 dB RELATIVE BANDWIDT	TH 1 <u>55.11</u> MHz (153.0-157.0)	1 <u>54.90</u> Mhz (153.0-157.0)	15 <u>4.68</u> MHz (153.0-157.0)
{10} ADD {7} AND {8} ÷ 2 =	<u>86,63</u> MHz (87.5 NOM)	<u>%6.50</u> MHz (87.5 NOM)	86.38 Mhz (87.5 NOM)
(10a) RECORD MEASURED TEM	(-15.0 TO -10.0	+ <u> 3.9</u> °C) (12.5 TO 17.5)	+ <u>√ 1 . 8 °</u> C (40.0 TO 45.0)
(6) ATTACH TRANSMISSION LO PERFORMANCE X-Y PLOT	oss <u>(</u> 1)	(√)	(√)
PASSBAND RIPPLE QUALIFICATION TEST PROCED 63-0005-010 PARA 4.5.4	URE -10°C	+15°C	+40°C
{11a} MIN INSERTION LOSS FRI	EQ <u>70.77 MHz</u>	<u>70.77</u> Mhz	70.77 MHz
MIN INSERTION LOSS PE	RFORMANCE -O.IO dB	- <u>0.10</u> dB	- <u>0.10</u> dB
{11b} 75% BW LOWER BANDED	GE FREQ <u>13.19</u> MHz	13.09 Mhz	12.97 MHz
75% BW LOWER BANDED	OGE I.L. PERF - <u>0.34</u> dB	- <u>0.36</u> dB	- <u>0.38</u> dB
(11c) 75% BW UPPER BANDEDO	GE FREQ 129.44 MHz	12 <u>9.34</u> Mhz	12 <u>9,22</u> MHz
75% BW UPPER BANDED	GE I.L. PERF - <u>0.34</u> dB	- <u>0.36</u> dB	- <u>0.38</u> dB
{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	<u>0,24</u> dB	<u>0.26</u> dB	<u>0.28</u> dB
{11e} PERFORMANCE DELTA (I.L. @ [11c] - I.L. @ {11a})	<u>0.24</u> dB	<u>0.76</u> dB	<u>().28</u> dB
repared in accordance war MU STD-100			

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APDH.DOC	SHEET	12







APPENDIX D	QUALIFICAT	ION TEST REPOR	Τ	
BANDPASS FILTER MI AEROJET 1331559-4 F	ODEL HL87.5-155-10SS REV	1 S/N <u>P236</u> -00	03	
PASSBAND RIPPLE (C	CON'T)			
{11f} RECORD PASS/F	FAIL (0.5 dB MAX)	PASS/FAIL	PASS/FAIL	PASS/FAIL
(11g) ATTACH PASSBA PERFORMANCE X-Y P		<u> </u>	(1)	<u> </u>
QUT-OF-BAND REJEC QUALIFICATION TEST 63-0005-010 PARA 4.5. Fc=87.5 MHz. REF {5A} FOR INSERT	PROCEDURE 5	-10°C	+15°C	+40°C
{12} WORST CASE RE. 0.300 MHz TO 1 0 MHz	JECTION FROM	- <u>60,4</u> dB (40.0 dB MIN)	- <u>60.3</u> dB (40.0 dB MIN)	<u>(().3</u> dB (40.0 dB MIN)
{13a} WORST CASE RE 188.25 MHz TO 1000.0		- <u>60.9</u> dB (40.0 dB MIN)	- <u>പ്ര.</u> ്ര dB (40.0 dB MIN)	- <u>62.5</u> dB (40.0 dB MIN)
{13c} RECORD MEASU		- <u>11.2</u> °C		+ <u>47.0</u> °C
{14} ATTACH REJECTION X-Y PLOT(S)	ON PERFORMANCE	-15.0 TO -10.0) (1 (√)		(40.0 TO 45.0)
TEST PERFORMED BY	R. HOGGATT DA	ATE 12/20/96		
NOTE IF TEST WITNES	SED BY AESD:	GSI:		
***** END OF FUNCTION	NAL PERFORMANCE T	EST ****		
OUTLINE AND MOUNT {16} REFERENCE CUST	ING DIMENSIONS VERI OMER DRAWING 1331	FICATION 559		
DESCRIPTION OF MEASUREMENT		DIMENSION TOLERANC		
OVER ALL LENGTH		3.50 ± .03	3.490	1
MOUNTING HOLE CEN	TER	0.125 <u>+</u> .010	0.12	6
BETWEEN UPPER MOL	INTING HOLES	3.250	_3.25	0
BETWEEN LOWER MOU	JNTING HOLES	3.250	_ 3.25	86
Prepared in accordance with MIL-STD-	100			
CONTRACT NO		AGE CODE	DWG NO	l REV

SIZE

DADEN-ANTHONY ASSOCIATES INC.

Α

CAGE CODE

FILE: ACAD/63/0510APDH.DOC

57032

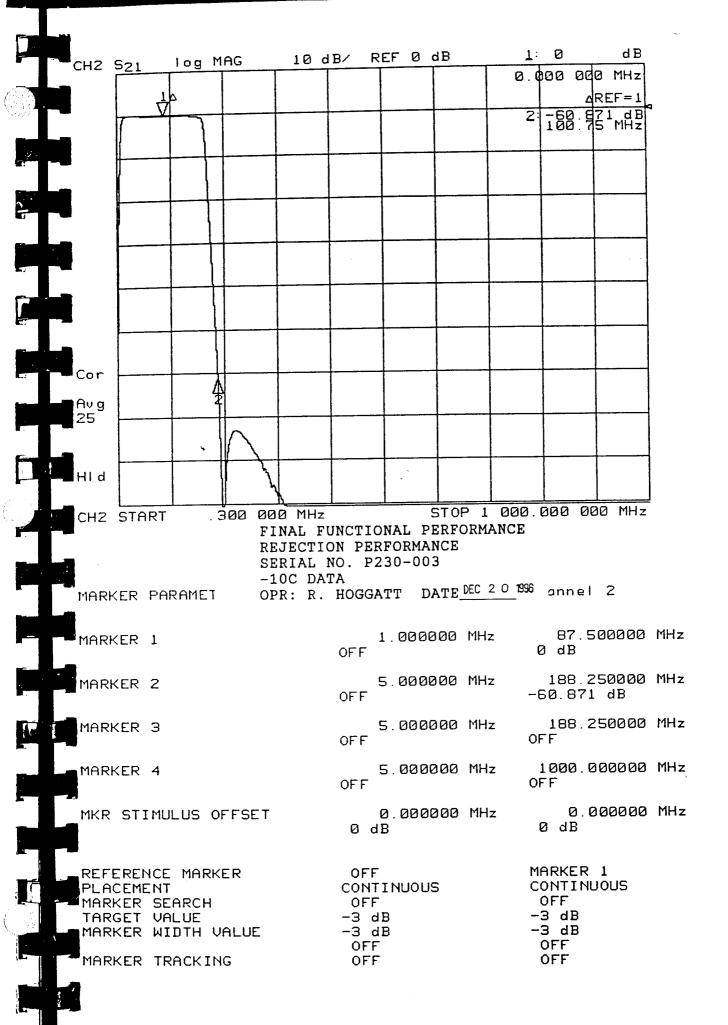
DWG. NO.

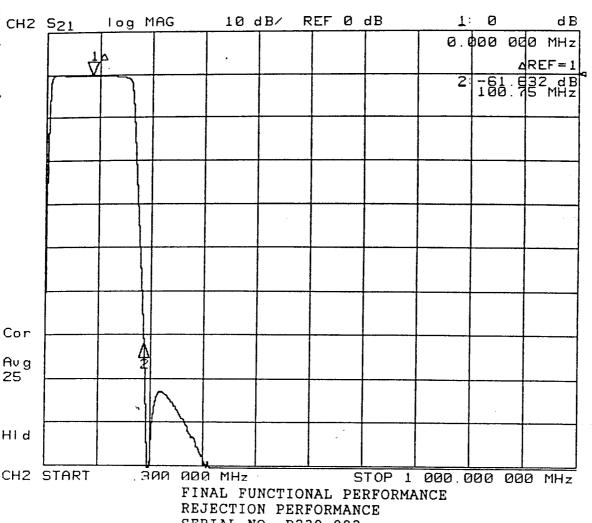
63-0005-010

SHEET

REV.

Н





SERIAL NO. P230-003

+15C DATA

MARKER PARAMET

MARKER TRACKING

OPR: R. HOGGATT DATE DEC 20 1996 annel 2

OFF

OFF

MARKER 1	1.000000 MHz OFF	87.500000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	188.250000 MHz -61.632 dB
MARKER 3	5.000000 MHz OFF	188.250000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB	MARKER 1 CONTINUOUS OFF -3 dB -3 dB

OFF

OFF

	'CH2	S ₂₁	log	MAG	10	dB/ R	EF Ø	dВ		Ø	d B	٦
		1	Δ						0.0	00 00	0 MHz REF=1	
									2:		Ø5 dB 5 MHz	q
	•				-							
	Cor											
	Av g 25		4						:			
	НІ а					-						
		START		300 00	10 MHz		g	STOP 1	000.0	100 DD	0 MHz	
(**				FI RE		N PERI	NAL PE FORMAN	RFORMA CE				
	MARKI	ER PAR	AME ⁻	+4	OC DAT	'Δ		TE ^{DEC 2}	0 1996	annel	2	
	MARKI	ER 1				OFF 1	. 0000	00 MHz		87.50 dB	30000	MHz
	MARKI	ER 2				OFF 5	. 0000	00 MHz		188.25 2.505		MHz
	MARKI	ER 3				OFF 5	. 0000	00 MHz	OF	188.25 F	50000	MHz
	MARKI	ER 4				OFF 5	. 0000	00 MHz	oF	000.00 F	00000	MHz
	MKR S	STIMUL	US OF	FSET		0 dB		00 MHz		Ø.00 dB	30000	MHz
	PLACE	RENCE EMENT					NUOUS			RKER :		
	TARGE	ER SEA ET VAL ER WID	UE			OFF -3 dB -3 dB			-3 0 0	FF dB dB		
	MARKE	ER TRA	CKING	3		OFF OFF			0	FF FF		

Δ	P	P	F	N	D	IX	Γ

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL87.5-155-10SS1 S/N_P230-003
AEROJET 133:559-4 REV. F.

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24087, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. + 23.3 °C (+19°C TO +29.0°C)

(15) ATTACH PASSBAND PERFORMANCE X-Y PLOT

{24} TEST POINT MATRIX

REF	FREC	UNIT	VALUE		REF	FR	REQ	UNIT	VALUE
F1	^ 5	MHz	<u>~ 83.1 dB</u>	•	F11	(*)	100.0	MHz	- 0.25 dB
F2	1.0	MHz	<u>-67.0 dB</u>		F12	(*)	125.0	MHz	<u>- 0,32</u> dB
F3	€ 0	MHz	<u>- 1%,4_</u> dB		F13		150.0	MHz	<u>-0,60 dB</u>
F4	⁻ 5	MHz	<u>- 7.39 dB</u>		F14		160.0	MHz	- 1.08 dB
F5	10.0	MHz	<u>-1.69</u> dB		F15		165.0	MHz	<u>- 4.80 dB</u>
F6	15.0	MHz	<u>- 0.21 dB</u>		F16		170.0	MHz	<u>- (. l_</u> dB
F7	25.0	MΗz	<u>-0.11 dB</u>		F17		200.0	MHz	<u>- \$7.8 </u> dB
F8	(*) 50 0	MHz	<u>-0.15</u> dB		F18		300.0	MHz	<u>- 88.7 </u> dB
F9	(*) 75.0	MHz	<u>- 0.22 dB</u>		F19		500.0	MHz	- <u>104.7</u> dB
F10	ვ⁻.5	MHz	- 0.25 dB	DA	F20	1	0.000	MHz	-110.2 dB
				5 7			1 -		

TEST PERF. RMED BY: 12 HOGGATT 5 DATE 12/20/96

NOTE IF TEST TITNESSED BY AESD______GSI _____

***** END OF EmulDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

QUALIFICATION TEST PROCEDURE

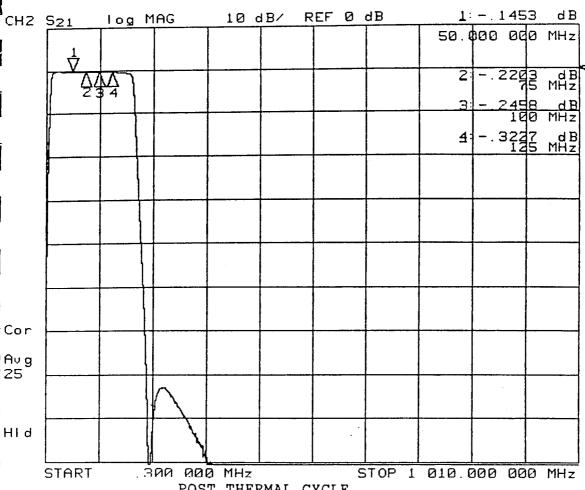
63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX D PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- b.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
- c.) OUT-CF-BAND REJECTION PER QTP PARA 4.5.5.
- d) INSERTION LOSS PER QTP PARA 4.5.2
- e) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g) VSWR PER QTP PARA 4.5.1.

Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APDH.DOC	SHEET	10



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P230-003 AMBIENT

MARKER PARAME

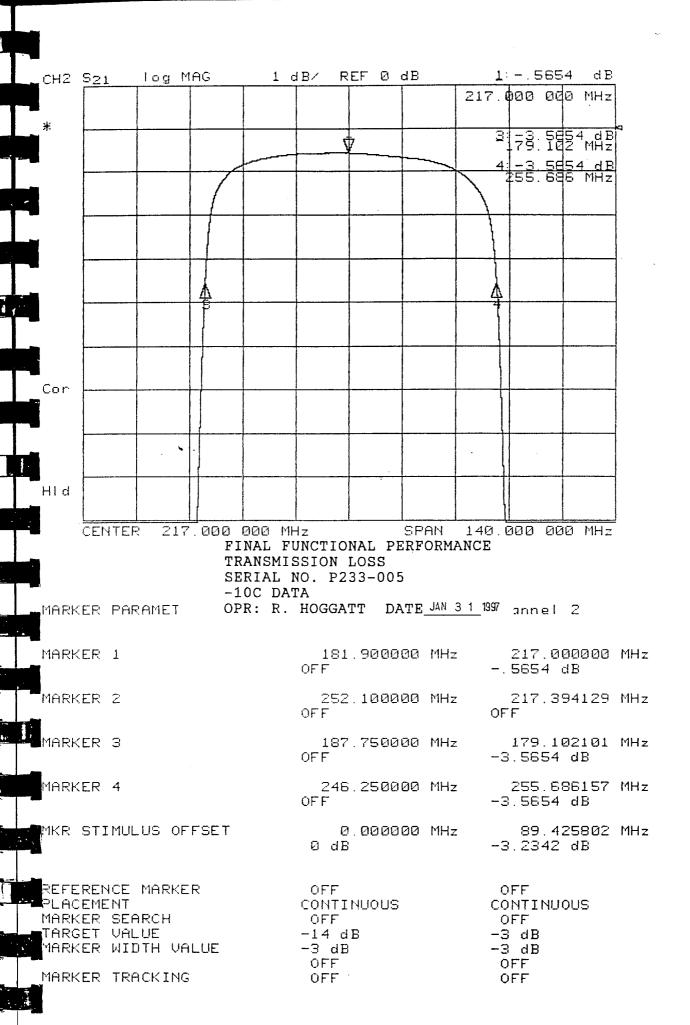
OPR: R. HOGGATT DATE DEC 2 0 1996 January 2

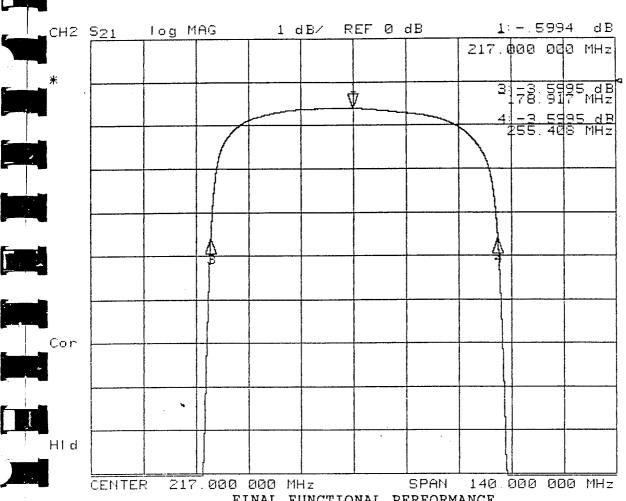
MARKER 1	17.750000 MHz OFF	50.000000 MHz 1453 dB
MARKER 2	157.250000 MHz OFF	75.000000 MHz 2203 dB
MARKER 3	29.375000 MHz OFF	100.000000 MHz - 2458 dB
MARKER 4	145.625000 MHz OFF	125.000000 MHz 3227 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89 425802 MHz -3 2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF

Channel 10 Bandpass Filter

IF Filter (S/N: 1331559-7, S/N: P233-005)

					Sc.
	APPENDIX G	ACCEPTAN	ICE TEST REPOR	RT	
	BANDPASS FILTER MODE AEROJET 1331559-7 REV	EL FX217-78-10SS	1 S/N <u>P233 -</u> 0	05	
	3.0 dB BANDWIDTH ACCEPTANCE TEST PRO 63-0005-02 PARA 4.5.3	CEDURE	-10°C	+15°C	+40°C
	(7) UPPER 3.0 dB BANDE	DGE	7 <u>55,ሬ9</u> MHz (254.0 -25 6.0)	2 <u>55.4 / M</u> hz (254.0-256.0)	2 <u>55.05</u> MHz (254.0-256.0)
	(8) LOWER 3.0 dB BANDE	DĠE	179.10 MHz (178.0-180.0)	1 <u>78.92</u> Mhz (178.0-180.0)	17 <u>8.72 </u> MHz (178.0-180.0)
	(9) 3.0 dB RELATIVE BANG	HTDIWC	<u>76.59</u> MHz (74.0 -78.0)	<u>76.49</u> Mhz (74.0-78.0)	7 <u>6.33 </u> MHz (74.0-78.0)
	{10} ADD {7} AND {8} > 2 =	:	7 <u>17.40</u> MHz (217.0 NOM)	2 <u>17.17</u> MHz (217.0 NOM)	21 <u>6.89 </u>
	(10a) RECORD MEASURE	D TEMPERATURE	- <u>12.∪</u> °C (-15.0 TO -1 0.0)	+ <u>1.4.4</u> °C (12.5 TO 17.5)	+ <u>43.3</u> °C (40.0 TO 45.0)
	(6) ATTACH TRANSMISSIC PERFORMATICE X-Y PLOT		<u>(</u> 1)	(√)	<u>(</u> \(\forall \)
43					
1	PASSBAND RIPPLE ACCEPTANCE TEST PROC 63-0005-02 PARA 4.5 4	CEDURE	-10°C	+15°C	+40°C
{	(11a) MANINSERTION LOS	SS FREQ	2 <u>13.85</u> MHz	7 <u>14.55</u> Mhz	2 <u>13.85</u> MHz
	MIN INSERTION LO	SS PERFORMANC	E -0.56 dB	- <u>(),(()</u> dB	- <u>0.64</u> dB
{	[11b] 75% BW LOWER BA	NDEDGE FREQ	186.38 MHz	1 <u>86.19 Mhz</u>	185.99 MHz
	75% BW LOWER BA	NDEDGE I.L. PER	F - 0.97 dB	- <u>1.02</u> dB	-1.08 dB
{	(11c) 75% BW UPPER BAN	NDEDGE FREQ	2 <u>44.88</u> MHz	2 <u>44.69</u> Mhz	2 <u>44.49</u> MHz
	75% BW UPPER BAI	NDEDGE I.L. PERF	- <u>097</u> dB	-1.02 dB	-1.08 dB
}	(11d) PERFORMANCE DEI (I.L. @ {11b} - I.L. @		<u>0.41</u> dB	<u>().42</u> dB	<u>0.44</u> dB
{	(I.L. © {11c} - I.L. @		<u>O.41</u> dB	<u>0.42</u> dB	<u> </u>
Prepar	red in accordance with MIL-STD-100 TRACT NC.	1 0:75	0.05.055		
		Α	57032	DWG. NO. 63-0005-02	REV. J
DAD	DEN-ANTHONY ASSOCIA	TES INC. FILE: ACAI	D/63;0502APGJ.DOC	SHEET	12





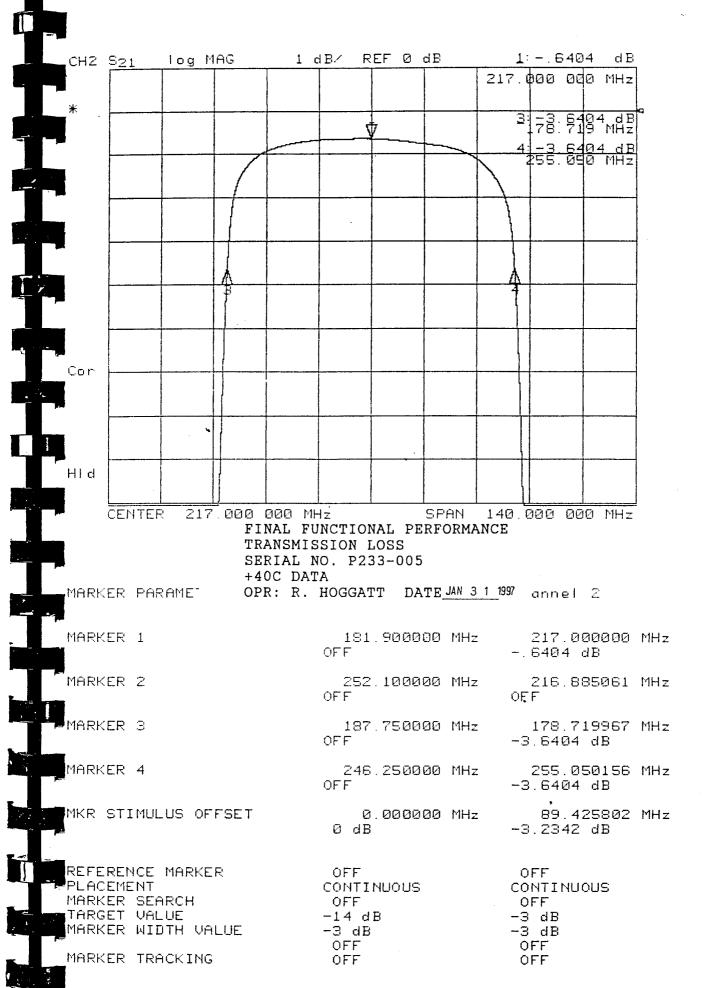
FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS

SERIAL NO. P233-005

+15C DATA

__MARKER PARAMET OPR: R. HOGGATT DATE JAN 3 1 1997 unnel 2

	•	
MARKER 1	181.900000 MHz OFF	217.000000 MHz 5994 dB
MARKER 2	252.100000 MHz OFF	217.162761 MHz OFF
MARKER 3	187.750000 MHz OFF	178.917138 MHz -3.5995 dB
MARKER 4	246.250000 MHz OFF	255.408385 MHz -3.5995 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF
MARKER TRACKING	OFF	OFF



APPENDIX G ACCEPTANCE TEST REPORT BANDPASS FILTER MODEL FX217-78-10SS1 S/N P233 -005 AEROJET 1331559-7 REV. €. PASSBAND RIPPLE (CON'T) {11f} RECORD PASS/FAIL (0.7 dB MAX) (PASSÆAIL (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** ACCEPTANCE TEST PROCEDURE -10°C +15°C +40°C 63-0005-02 PARA 4.5.5 Fc=217.0 MHz. REF (5A) FOR INSERTION LOSS @ Fc {12} WORST CASE REJECTION FROM -43.1 dB -43.1 dB -43.4 dB 0.300 MHz TO 166.3 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13a} WORST CASE REJECTION FROM -45.0 dB -45.5 dB -45.7 dB 267.7 MHz TD 1000.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) (13c) RECORD MEASURED TEMPERATURE -12.1 °C +14.4 °C +43.4 °C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) {14} ATTACH REJECTION PERFORMANCE X-Y PLOTISE TEST PERFORMED BY 12. HOGGAL DATE 13197 NOTE IF TEST WITNESSED BY AESD: ____ GSI: __ Not Witnessed ***** END OF FUNCTIONAL PERFORMANCE TEST **** this time. DLD **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION** {16} REFERENCE CUSTOMER DRAWING 1331559 **DESCRIPTION OF** DIMENSION AND ACTUAL **MEASUREMENT** TOLERANCE **MEASUREMENT OVER ALL LENGTH** 5,502 $5.50 \pm .03$ MOUNTING HOLE CENTER $0.125 \pm .010$ BETWEEN UPPER MOUNTING HOLES 5.250 BETWEEN LOWER MOUNTING HOLES 5.250 repared in accordance with MIL-STD-100 CONTRACT NO. SIZE CAGE CODE DWG. NO. REV.

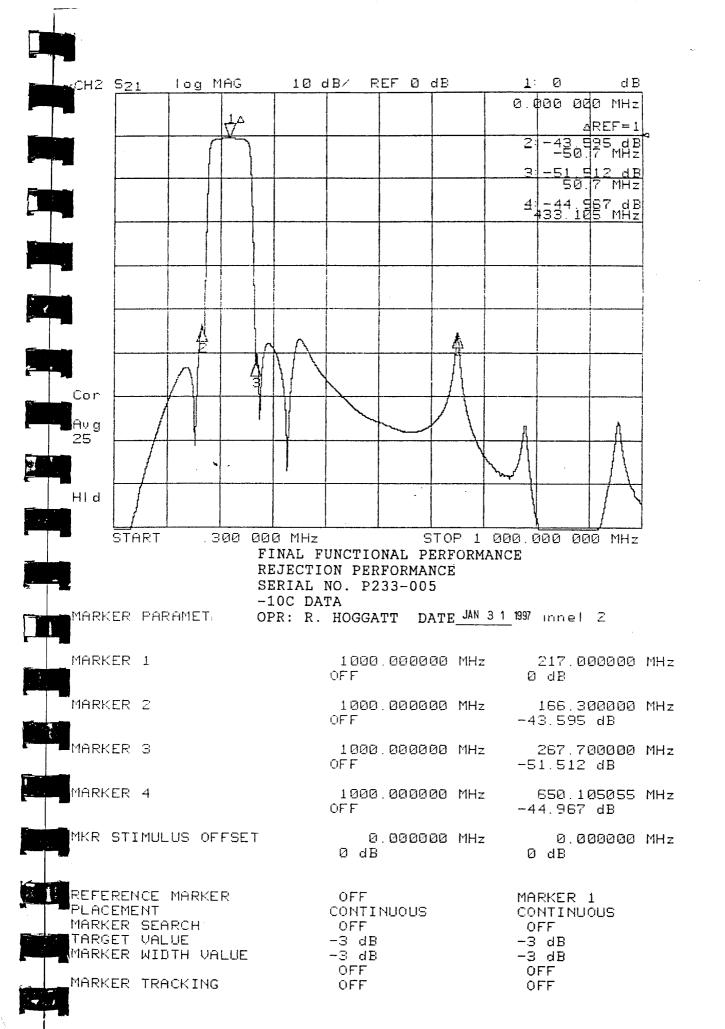
57032

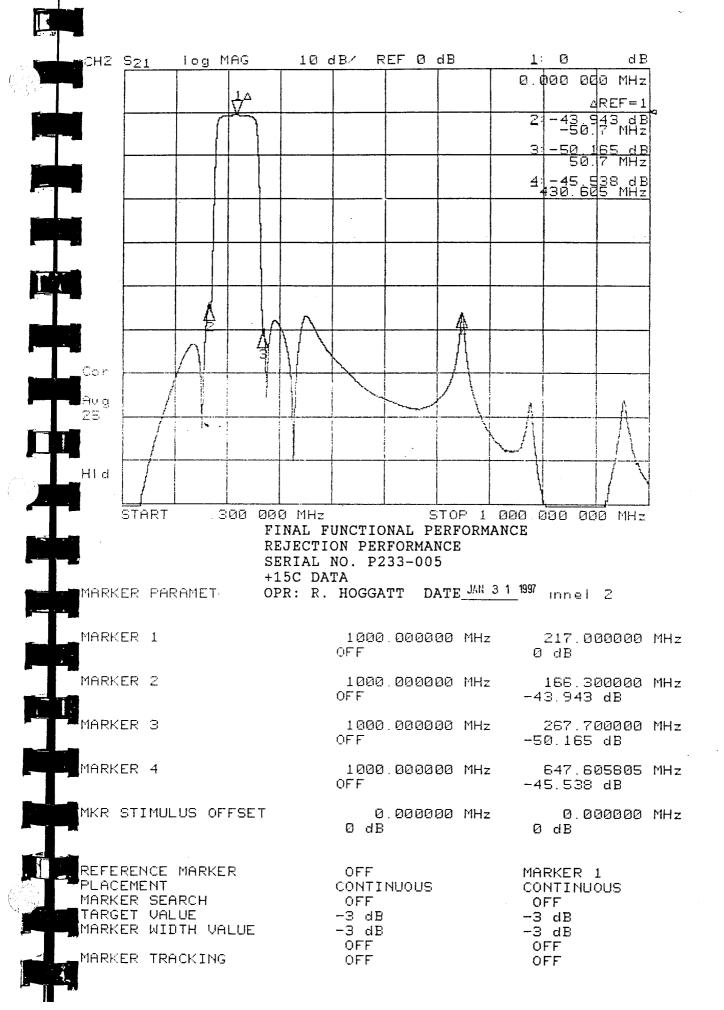
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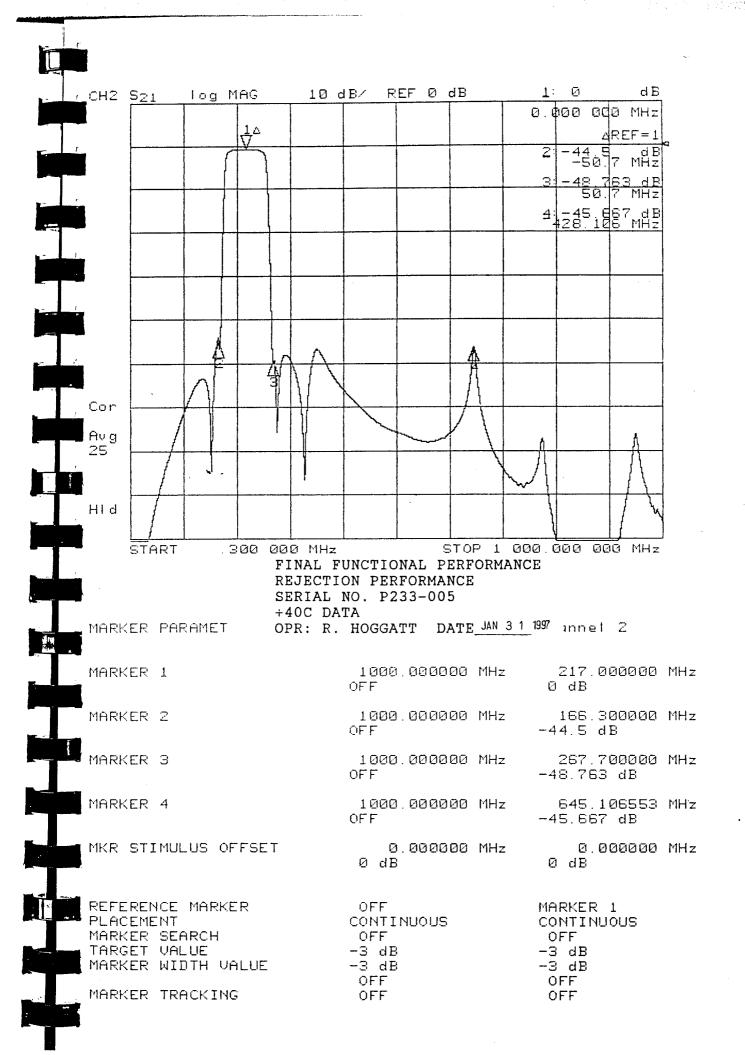
DADEN-ANTHONY ASSOCIATES INC.

63-0005-02

SHEET







AP	PE	ND.	IX	G

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL FX217-78-10SS1 S/N P233 - 005 AEROJET 1331559-7 REV.

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE +2-1.4 °C (+19°C TO +29.0°C)

(15) ATTACH PASSBAND PERFORMANCE X-Y PLOT

<u>√</u>(√)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE		REF	FREQ	UNIT	VALUE
F1	1.0	MHz	- <u>103,</u> 5 dB	•	F11	217.0	MHz	-0.59 dB
F2	10.0	MHz	-104.4 dB		F12	(*) 224.0	MHz	-0.63 dB
F3	100.0	MHz	-61.6dB		F13	(*) 230.0	MHz	-0.67 dB
F4	150.0	MHz	-61.5 dB		F14	240.0	MHz	-0.54 dB
F5	170.0	MHz	-45.2 dB		F15	250.0	MHz	
F6	178.0	MHz	-6.29 dB		F16	256.0	MHz	- <u>1.48</u> dB - <u>5.57</u> dB
F7	184.0	MHz	- 1.30 dB		F17	264.0	MHz	-37.1 dB
F8	194.0	МНz	-0.76 dB		F18	300.0	MHz	-49.1 dB
F9	(*) 204.0	MHz	-0.64 dB		F19	500.0	MHz	-65.6 dB
F10	(*) 210.0	MHz	- 0.60 dB		F20	1000.0	MHz	- 86.5 dB
						, , ,		20.7 dB
TEST	PERFORM	ED BY:	K. HOGGAH		_ DATE	1/31/97	$ \begin{array}{c} D_A \\ \hline 5 \end{array} $	

NOTE IF TEST WITNESSED BY AESD	GSI	Not	Witness	sed
		this	s time.	DLI

***** END OF BANDPASS CHARACTERISTICS TEST *****

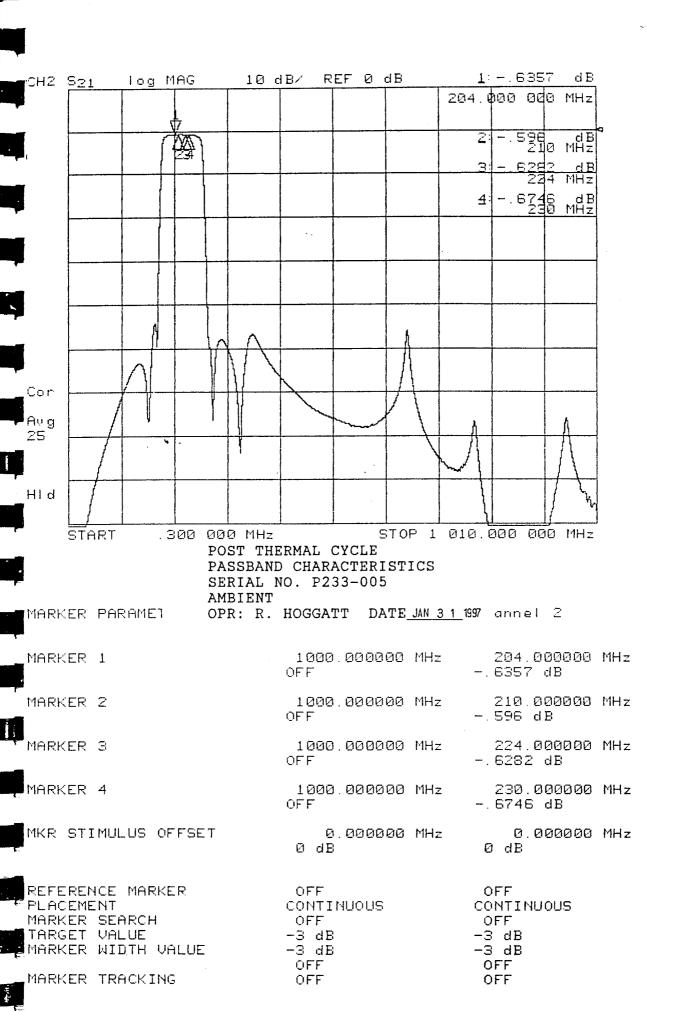
FUNCTIONAL PERFORMANCE TEST

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX G PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

CONTRACT NO.				
CONTRACT NO.	SIZE	CAGE CODE	DWG. NO.	REV.
	A	57032	63-0005-02	
DADEN-ANTHONY ASSOCIATES INC.	F11 F 4 A			
L. TROOTE LITES INC.	FILE: AC	AD/83/2502APGJ.DOC	SHEET	10



Channel 11 Bandpass Filter

SAW Filter (S/N: 1331576-1, S/N: B01)

AEROJET P	ART: 13	31576-	CAL TEST DATA SHEET	123 , SJ	RIAL: RE	11	
TESTED BY	PORG	H.	TITLE: MCC DATE:	19541	9)_ TIM	E: 10:00 pm	f
EQUIPMENT			SERIAL:3418A07382	CAL	DUE:18	1/12/97	
	HP 34		SERIAL: 2136A03127				
	APH ACTTO	REQUI	REPERT TITLE		DATA		P/F
REQ.	Q/ATP	nnere	TING TEMPERATURE		-4.7	C	P_
3.5.1.1	5.2.3	CENTE	R FREBLENCY &			~	
3.2.1.4	5.6.0		R FREQUENCY STABILITY	ſ		*	
J.L.I.			73.335/275.065 HHz	-	274.534	Miz	P
			69.335/371.065 MHz		378.745		<u>P</u>
3.2.1.5	5.2.4		BANDWIDTH:				
012111			34/36 MHz		34.84	MHz	P
			34/36 MHz			7 Miz	P
7 2 1 6	5.2.5		AND SYMMETRY			- '	
3.61110	0.2.0	10: /	'0.5 dB		9.3	dВ	P
			∕0.5 dB		9.0		P
3.2.1.7	526		SAND RIPPLE				
J.L.II	0.2.0		7-287.7 HHz: /1.0 dB		9.6	dΒ	P
:			7-383.7 HHz: /1.0 dB		8.7	- Œ	<u>p</u>
3 2 1 A	5.2.7		RTION LOSS				
0. 4. 1.0	CILII		27.8/39.2 dB		29.4	ď₿	P
			27.6/30.2 dB		29.6	dB	P
2212	528		RTION LOSS VARIATION				
3.5.1.3	a. C. O		-0.4/0.4 dB		-0.1	dB	Р
			-0.4/0.4 dB		8.8	dB	<u>p</u>
2 2 1 10	529		TUDE BALANCE				
3.5.1.10	J.C.	10.8	: /0.5 dB		8.2	- dB	Р
3 2 1:11	5.2.18	OIT-	F-BAND REJECTION			-	
OI LETT	0,2,1	••••	BAND	PEAK (部)	WIDTH(MHz)	
		WIDE:	: 1-225,428-1888 MHz:	42.1		8.888	
			225.666-249.935,				
1			298, 465-345, 935,				
			394,465-428.00 MHz:	41-4		B. 999	
:		PEAK:	35.9/ dB	41.4	₫₿		P
		WIDTH	1: /7.2 MHz			9.888 MHz	P
3.2.1.12	5.2.11						
		LO:			1.29	Unitless	P
'		HI:	/1.30 Unitless		1.27	Unitless	Р
3.2.1.14	5.2.12	VSUR	(return loss)		•		
·			7-287.7,356.7-383.7 M	Hz			
i			S11: 7.5/ dB		7.7	dB	P
		DUAL	S22: 7.5/ dB		9.4	dB	P
4.8.2	5.2.14	LIMI	TED FUNCTIONAL TESTS		-		<u> </u>
:		CENT	er frequency: -0.2/8.	2 MHz		MHz	T.
		3 dB	BANDHIDTH: -0.72/8.7	2 15 12	_0_	15 12	<u> </u>
:			rtion loss: -0.5/0.5	₫B	<u>-ù</u>	dB	P
NONE	5.2.15		SHEET SUMMARY		20	(2)	•
		(PAS	S/FAIL)		+1	$\Psi^{r}J$	
DIENIAL A			· · · · · · · · · · · · · · · · · · ·			DOCE (VOE	
PHONON CO		UN				CAGE: 6Y858	_001
7 HERMAN		70				TEL: 293-651	
SIMSBURY,	CI RPE	1/6				FAX: 283-651	6135-1

```
PHONON CORPORATION
FILE=1ACAB01A. DAT 11:51:48 05-28-1998
PN_100828_823 FIRRL_FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL_SXX
96-23-1997 HP8753, SSCF, SSFF1X, SSREF
                                              INCR. = .4 SYSTEM BANBULDTH= 27
 PERLENCY (MHZ): CENTER= 274.2 WIDTH= 100
                                                        BELAY (US) = 0 SLEPE (US/MIZ) = 0
                                 PHOSE (BEG) = 3886.015
 _FERENCES: LOSS(DB) = 29.38699
RMS ERRORS: LOSS(DB)= .1691122
                                 PHRSE (DEG) = 1174.348
PLOT SCALES: LOSS 10 D9/DIV LOSS 1 D9/DIV VS. FRED 10 NHZ/DIV
LOSS TO DB/DIV
LOSS 4 DB/DIV
                                        ንዯሃንሎ
FRED 10 MHZ/DIU
PEAK: LEVEL (DB) = 28.88334 FRED (MHZ) = 287.9386 DELAY (US) =-.4287314 SIDELONE (DB) =-48.53478
ENERGY: LEVEL (DB) = 29.54826 CENTER (MHZ) = 274.7936 WIDTH (MHZ) = 36.43295 SKEN (MHZ) =-.4393684
                                              HID (MHZ) AV-CTR(MHZ) AV-HID (MHZ) AV-SL (BB) LOX (MHZ)
                                                                                                          HIX (MIZ)
                      HI (MHZ)
                                  CTR(NHZ)
L(DB)
          LD (NHZ)
                                                                                                          287.93857
                                                                          8.00000
                                                                                      8.88
                                                                                             287. 93857
                                                           287.93857
                     287, 93857
                                  287, 93857
                                                 0.00000
 -0.50
         287, 93857
                                                           275.23694
                                                                         31.74888
                                                                                    -13.63
                                                                                             259. 12256
                                                                                                          298, 62328
                                                31.50064
  0.50
         259. 12256
                     298,62328
                                  274, 87286
                                                                                             258.49885
                                                                                                          298, 95621
                                                                         32.41492
                                                                                    -13.92
                                                           274.89532
                     290, 95621
                                  274, 72314
                                                32, 46616
  1.00
         258, 49005
                                                                         33.56348
                                                                                    -16.17
                                                                                             257.69284
                                                                                                          291,55854
                                                           274.89661
                     291.55654
                                  274.62178
                                                33.85778
  2.00
         257.69284
                                                                                             257.11252
                                                           274.89108
                                                                                                          291.95459
                                  274.53357
                                                34.84287
                                                                         34.01027
                                                                                    -17.52
                     291.95459
  3.00
         257.11252
                                                35.61526
                                                           274.87796
                                                                         34.37143
                                                                                    -19.09
                                                                                             256, 68225
                                                                                                          292, 29752
         256,68225
                     292.29752
                                  274.48987
  4.88
                                                36.26260
                                                                                             256, 32919
                                                                                                          292, 59188
                                                           274.79745
                                                                         34.52347
                                                                                    -19.57
         256.32919
                     292, 59180
                                  274.46851
  5.88
                                                           274, 88838
                                                                         34, 76382
                                                                                    -21.95
                                                                                             256, 83478
                                                                                                          292, 82727
                                  274.43897
                                                36.79257
         256. 03470
                     292.82727
  6.00
                     293.62323
                                                                         35, 83694
                                  274.39389
                                                38, 45868
                                                           274, 79984
                                                                                    -26.69
                                                                                             255. 16455
                                                                                                          293.62323
 10.00
         255. 16455
                                                                                    -37.86
                                                                                             253.78989
                                                                                                          294, 97397
                                                41.25488
                                                           274.79198
                                                                         35. 15987
 20.00
         253.78989
                     294, 97397
                                  274.34152
                                  274.35066
                                                                         35, 16855
                                                                                    -47.59
                                                                                             252.78462
 30.00
                                                43.15205
                                                           274, 79358
                                                                                                          295, 93668
         252,78462
                     295, 93668
         251.95183
                     296, 94354
                                                                         35, 16914
                                                                                    -51.29
                                                                                             251.95183
                                                                                                          296, 94354
                                  274, 44769
                                                44.99171
                                                           274.79355
 40, 90
BAND (MHZ)
            260,700
                      287.700
                  -9.36
LMIN(DB)
LNAX (DB)
                   0.26
LDEL (DB)
                   0.62
                -2001.37
PHIN (DEG)
PMAX (DEG)
                2001.27
PSEL (DEG)
                4882.64
File: 1AC8B81A.DAT
                       Passband Symmetry = 0.3 dB
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PDEL (DEG)

File: 1CCaBO4A. DAT

3855.78

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PHONON CORPORATION
FILE=1CC8B01A_DAT 11:51:51 85-28-1998
PN_188828_823 FINAL_FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL_SXX
66-23-1997 HP8753, SSCF, SSFFIX, SBREF
                                              INCR. = .4 SYSTEM BANGNIDTH= 27
FREQUENCY (NHZ): CENTER= 370.2
                                 WIDTH= 100
                                 PHRSE (BEG) =-3362.098 BELAY (US) = 0 SLEPE (US/NHZ) = 0
REFERENCES: LOSS(DB)= 29.59872
                                  PHASE (BEB) = 1130.15
RMS ERRORS: LOSS(DB)= .1623449
PLOT SCALES: LOSS 18 DB/DIV LOSS 1 DB/DIV VS. FRED 10 MHZ/DIV
LOSS: 10 DB/DIV
LOSS 4 DB/BIU
FREQ 10 MHZ/DIU
PEAK: LEVEL (DB) = 28.96824 FRED (MHZ) = 356.8894 DELRY (US) =-. 4835649 SIBELOBE (DB) =-41.9448
ENERGY: LEVEL (DB) = 29.71339 CENTER (NHZ) = 370.6586 WIBTH (NHZ) = 36.67384 SKEN (NHZ) = .1780324
                                               HID (MHZ) AV-CTROMEZ) AV-HID (MHZ) AV-SL (DB) LOX (NHZ)
                                                                                                           HIX (MHZ)
                       HI (MHZ)
                                  CTR(MHZ)
L(DB)
          LD(HIZ)
                                                 0.00008
                                                                          0.00000
                                                                                       8.80
                                                                                              356.88937
                                                                                                           356.88937
                                                           356.88937
                                  356.88937
 -0.63
         356.88937
                      356, 88937
                                                                                              354.28284
                                                                                                           386, 76691
                                  370.52448
                                                32, 48486
                                                           378, 46178
                                                                         32,69081
                                                                                     -13.51
  0.58
         354.28264
                      386, 76691
                                                                                              354.82222
                                                           379, 46885
                                                                                                           387.18726
                                                                         33.37503
                                                                                    -14.58
                      387, 18726
                                  378, 68474
                                                33.16584
  1.00
         354.82222
                                                                                                           387.84891
                                                           378.59897
                                                                                              353.55845
                                                                         34.21479
                                                                                    -16.43
                                                34.29846
                      387.84891
                                  379.69968
  2.99
         353, 55845
                                                                                              353.17682
                                                                         34,66121
                                                                                    -17.91
                                                                                                           388.31418
                                                           378.59274
                                  379,74548
                                                35, 13736
  3.00
         353, 17682
                      388, 31418
                                                           378.59149
                                                                         35.98644
                                                                                    -19.58
                                                                                              352, 87711
                                                                                                           388.70792
                                                35.83981
                                  378.79251
                      388.79792
  4.00
         352.87711
                                                                         35. 14000
                                                                                              352, 61929
                                                                                                           389. 09598
                                  370.85764
                                                36, 47668
                                                           378,66198
                                                                                    -20, 44
         352,61929
                      389, 09598
  5.88
                                                                                    -22.57
                                                                                              352, 38995
                                                                                                           389. 42783
                                  376, 99851
                                                37.03708
                                                           378.65283
                                                                         35, 36757
         352.38995
                      389.42783
  6.00
                                                                         35, 61554
                                                                                              351.69666
                                                                                                           398.31915
                                                           370.65854
                                                                                    -27.79
                                  371.00790
                                                38,62250
         351.69666
                      390.31915
 10.00
                                                                                              359, 48971
                                                                                    -39.65
                                                                                                           391.88884
                      391.88884
                                  371.14878
                                                41.32013
                                                           370.65860
                                                                         35.71087
         350.48071
 20.00
                                                                                              349, 47486
                                                                                                           392, 79791
                                  371.13599
                                                           370.65842
                                                                         35.71664
                                                                                    -45.55
         349.47486
                      392, 79791
                                                43.32385
 30.00
                                                                                    -47.52
                                                                                              348, 82956
                                                           378.65829
                                                                         35,71725
                                                                                                           393, 38984
         348.82056
                      393.39984
                                  371.06519
                                                44.48929
 40.00
BAND (MHZ)
            356, 798
                      383, 700
LMIN(DB)
                   -8.62
LMAX (DB)
                    9.28
                    8.98
LDEL (DB)
PMIN(DEG)
                -1932.79
PMAX (BEG)
                1922, 99
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Passband Symmetry = 8.8 dB

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PHONON CORPORATION
FILE=1AR8B01A.BAT 11:52:01 05-28-1998
PN_188828_823 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX
~~-23-1997 HP8753, SSCF, SSFF1X, SSREF
                                                         SYSTEM BONDWINTH 27
   PUENCY (NHZ): CENTER= 274.2 WIDTH= 188
                                              INCR. = .4
                                                         DELAY (US) = 8 SLBPE (US/NHZ) = 8
NETERENCES: LDSS(DB) = 29.52982 PHASE (BES) = 3824.559
                                 PHASE (DES) = 1176.121
RMS ERRORS: LDSS(DB)= .1678936
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/BIV VS.
                                                  FRED 18 NHZ/DIV
LOSS: TG: DB/DTU
LOSS 1-DB/BIV -
FREQ 10 MHZ/DIU
PEAK: LEVEL (DB) = 29.06731 FRED (NHZ) = 287.5014 DELAY (DG) =-.4212485 SIDELEDE (DB) =-47.90545
ENERGY: LEVEL (DB) = 29.69487 CENTER (MHZ) = 274.3331 WIDTH (MHZ) = 36.4084 SKEN (MHZ) = -.3811682
                                              HID (MHZ) AV-CTR(MHZ) AV-HIB (MHZ) AV-SL (DB) LDX (MHZ)
                                                                                                          HIX (MHZ)
                                  CTR(MIZ)
L(DB)
          LB (NHZ)
                      HI (MHZ)
                                                9.90000
                                                                         8.00000
                                                                                             287.58137
                                                                                                          287.58137
                      287.50137
                                  287.56137
                                                           287.50137
                                                                                      0.00
 -0.46
         287.50137
                                                31.43417
                                                                         31,38329
                                                                                    -12.66
                                                                                             258, 71857
                                                                                                          298. 14474
                                  274.42767
                                                           274.62213
                     290.14474
  8.50
         258.71057
                                  274.28955
                                                           274.45267
                                                                         32.32973
                                                                                    -13.99
                                                                                             258, 97864
                                                                                                          290,58843
                      290.58843
                                                32, 42178
         258.07864
  1.99
         257, 29385
                     291, 19848
                                                33.88655
                                                           274.44931
                                                                         33.46672
                                                                                    -16.26
                                                                                             257.29385
                                                                                                          291, 10040
                                  274, 19714
  2.00
                                                           274.44878
                                                                         33.99676
                                                                                    -17.62
                                                                                             256.70789
                                                                                                          291.51144
         256, 70789
                     291,51144
                                  274, 18968
                                                34, 88356
  3.00
                                                           274, 42498
                                                                         34.26242
                                                                                    -19.28
                                                                                             256.28091
                                                                                                          291.84784
         256.28091
                     291.84784
                                  274.06439
                                                35.56693
  4.90
                                                                         34.41453
                                                                                    -28.89
                                                                                             255, 92957
                                                                                                          292, 14362
                     292, 14362
                                  274.03659
                                                36.21485
                                                           274.34433
         255, 92957
  5.00
                                  274.00885
                                                                        34.64961
                                                                                    -22.89
                                                                                             255, 63707
                                                                                                          292, 38862
                     292, 38862
                                                36, 74355
                                                           274.34588
         255.63707
  6.00
                                                38, 48689
                                                           274.34861
                                                                         34.91502
                                                                                    -25, 87
                                                                                             254, 76830
                                                                                                          293, 16919
                                  273.96875
         254.76830
                     293.16919
 10.00
                                  273.92209
                                                41,21526
                                                           274.33170
                                                                        35, 83354
                                                                                    -38, 14
                                                                                             253, 31447
                                                                                                          294, 52972
         253.31447
                      294.52972
 20.00
                                                           274.33310
                                  273.94892
                                                43.16248
                                                                         35,04163
                                                                                    -47.56
                                                                                             252, 38968
                                                                                                          295, 49216
         252, 38968
                     295.49216
 39.00
                                                                        35, 84219
         251.52971
                     296, 51575
                                  274.82274
                                                44.98684
                                                           274.33397
                                                                                    -51.16
                                                                                             251,52971
                                                                                                          296, 51575
 40.00
BAND (NHZ)
            250,700
                      287.700
                   0.45
LMIN(DB)
LMAX (DB)
                   0.27
LDEL (DB)
                   0.72
PMIN(DEG)
                -2003, 57
PMAX (DEG)
                2006.00
PDEL (DEG)
                4009.58
```

Passband Symmetry = 8.3 dB

:: 1AR8B81A.DAT

SIMSBURY, CT 06070

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PHONON CORPORATION
FILE=1CR8B01A. BAT 11:52:05 05-28-1998
PN_100828_823 FINAL_FUNCTIONAL TEMP:R PRETOFLIGHT /N DUAL_SXX
   -23-1997 HP8753, SSCF, SSFFIX, SSREF
   ZAJENCY (NHZ): CENTER= 370.2 HIDTH= 100 INCR.= .4 SYSTEM BANDHIDTH= 27
MEFERENCES: LOSS(DB) = 29.55719 PHASE(DEB) =-3448.879 DELAY(US) = 0 SLOPE(US/NHZ) = 0
RMS ERRORS: LOSS (DB) = .1382874 PHOSE (DEB) = 1132.072
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED 10 WHZ/DIV
LOSS TO DE/DIV
LOSS 4 DB/BIV ..
My My why
FREQ 10 MHZ/DIU
PEAK: LEVEL (DB) = 28.92852 FRED (MHZ) = 355.2629 DELAY (UG) =-. 4836162 $1882,08E (BB) =-41.66381
ENERGY: LEVEL (DB) = 29.67836 CENTER (NHZ) = 378.8882 WIBTH (NHZ) = 36.62452 SWEM (NHZ) = .2679488
                                  CTR(MIZ)
                                              HID (MHZ) AV-CTR (MHZ) AV-HIB (MHZ) AV-SL(DB) LOX (MHZ)
                                                                                                         HIX (MIZ)
L(DB)
          LD (MHZ)
                      HI (MHZ)
                                                          356, 26291
                                                                         8,89889
                                                                                     0.00
                                                                                            356, 26291
                                                                                                         356.26291
         356.25291
                     356.26291
                                  356, 26291
                                                0.00000
 -0.63
                                                                                            353, 69876
                                                          369, 62225
                                                                        32.78248
                                                                                   -13.58
                                                                                                         386.06607
  0.50
         353.69876
                     386, 06607
                                 369,88242
                                               32.36731
                                                          369.79764
                                                                        33,05211
                                                                                   -14.88
                                                                                            353, 44592
                                                                                                         386.53946
         353, 44592
                     386, 53946
                                 369, 99268
                                               33.89354
  1.00
                                                                                            352, 97479
  2.00
         352.97479
                     387.22382
                                 378, 89891
                                               34.24823
                                                          369.81342
                                                                        34.20435
                                                                                   -16.51
                                                                                                         387.22382
                                                          369, 93341
                                                                        34, 43936
                                                                                   -17.20
                                                                                            352,68510
                                                                                                         387, 69431
  3,00
         352,68518
                     387.69431
                                  378, 14972
                                               35,00920
                                                          369.93112
                                                                        34.82845
                                                                                   -18.79
                                                                                            352, 32889
                                                                                                         388. 09543
         352, 32089
                     388.99543
                                 379.29816
                                               35.77454
  4.00
  5.00
        352.05579
                                                          369, 93616
                                                                        35, 12259
                                                                                   -29.58
                                                                                            352, 65579
                                                                                                         388, 48743
                     388, 48743
                                 379, 27161
                                               36, 43164
                                                          369, 99847
                                                                        35,24621
                                                                                   -21.56
                                                                                            351.82783
                                                                                                         388, 61998
         351.82703
                     388.81998
                                 378, 32349
                                               36, 99295
  6.00
         351.14059
                     389.72519
                                 378, 43289
                                               38.58459
                                                          369, 99609
                                                                        35,54321
                                                                                   -25, 47
                                                                                            351.14859
                                                                                                         389, 72519
 10.00
                                                          370.00003
                                                                        35.67198
20.80
         349.92432
                     391.21164
                                 378.56799
                                               41.28732
                                                                                   -37, 48
                                                                                            349, 92432
                                                                                                         391,21164
 30.00
         348.92001
                     392.20972
                                 379,56488
                                               43, 28970
                                                          370.90993
                                                                        35, 68138
                                                                                   -45.94
                                                                                            348, 92901
                                                                                                         392, 20972
        348, 25568
                     392,76431
                                 379, 51981
                                               44.58864
                                                          378.00797
                                                                        35.68154
                                                                                   -47.83
                                                                                            348, 25568
                                                                                                         392.76431
 40.00
BAND (MHZ)
            356,700
                      383, 700
LMIN(DB)
                  -9.31
LMAX (DB)
                  8.27
LDEL (DB)
                   0.58
PMIN (DEG)
               -1936.08
PMAX (DEG)
                1926.99
```

Passband Symmetry = 0.1 dB

PREL (DEG)

: ICRBB01A. DAT

3863.87

7495.82

FILE: 1ERBB01A.DAT Out-of-band Rejection: PERK= 42.1 dB WIDTH= 8.800 MHz

3706.72 -3851.27 -3339.10

7751.52

3611.49 11602.79 10034.12

7318.21

PMIN (DEG) PMAX (DEG)

PDEL (DEG)

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PHONON CORPORATION
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FILE=IFR8801A. BAT | 11:52:88 | 05-28-1998 PN 100828_823 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX

23-1997 HP8753, SSREF, SSREF, SSREF, SSREF

AUENCY (NHZ): CENTER= 322.2 WIBTH= 200 INCR.= .4 SYSTEM BANDWIDTH= 200

HEFERENCES: LOSS(DB) = 29.54311 PHRSE(DEG) = 77.57881 DELRY(US) = .2258519 SLOPE(US/NHZ) = 0

RMS ERRORS: LOSS(DB) = 24.07656 PHASE(DEB) = 944.0335

: : 1 :
·
: : :
Manyen
::::::::::::::::::::::::::::::::::
: : :

PEAK: LEVEL(DB) = 28,92852 FRED(NHZ) = 356.2629 DELAY(US) = 4.648593E-62 SIDELDBE(DB) =-41.66381

ENERGY: LEVEL (DB) = 29.68213 CENTER (MHZ) = 322.4483 WIDTH(MHZ) = 73.92465 SKEW (MHZ) =-.4518743 HID (MIZ) AV-ETROMIZ) AV-HID ONIZ) AV-SL (BB) LOX (MIZ) HIX (MHZ) L(DB) LD(NHZ) HI (MHZ) CTR(MIZ) 0.00 356.26291 356, 26291 8,99998 356.26291 0. 00000 356, 26291 356, 26291 356, 26291 -0.61 -6.44 258.68939 369.62225 32.59655 386.83265 353.70587 386.83265 369.86926 32.32678 0.50 386.52798 353, 45303 386.52798 369, 99851 33. 87495 369.79764 32.94513 -6.46 258.05997 1.00 34.89363 -6.57 257.28543 387.21462 2.00 352.98659 387.21482 370.09729 34.23343 369.81342 34.32788 256, 79038 387.68829 370.14899 35.87864 369.93341 -6.57 387.58829 3.00 352,68965 256, 27518 388. 88990 388. 98999 370.20748 35.76501 369.93115 34.71572 -6.68 4.00 352.32489 -6.62 255,92513 388.48215 352. 85923 388.48215 378, 27969 35, 42291 369.93619 35, 89898 5.00 351.83982 388.81578 379, 32288 36.98569 369.99847 35. 12614 -6.62 255.63321 386.81578 6.80 254.76564 10.69 351.14276 389,72250 378, 43252 38.57980 369.99612 35. 42817 -6.61 389.72250 ස3.31297 349, 92587 379.00803 -6.56 391.28972 391.20972 370.56781 41.28384 35.55644 20.00 **370.0088**3 35.56582 392,20892 43, 28772 -6.58252.38858 30.00 348, 92120 378.56586 392, 20892 378.00000 35.56685 392.76358 348, 25635 392.76358 370, 50995 44.50723 -6.47 251.52789 40,00

BAND (NHZ) 260.700 287.700 356.700 383.700

-8.29 -0.47 **-0.** 61 LMIN(DB) LINAX (DB) 66.81 0.28 **0.2**5 LBEL (DB) 9.72 67.43 8.58 -1076.04 -1959.11 PMIN(DEG) -496, 19 794.65 1884.45 1870.68 3843.56 PMAX (DEG) 1227.99

POEL (DEG)

1724.18 3: 1FR8B81A.DAT Out-of-band Rejection: PEAK= 42.7 dB WIDTH= 0.000 MHz

PHONON CORPORATION

FILE: 1FR8B81A. DAT! (+SSCF)

PN_188828_823 FINAL_FUNCTIONAL_TEMP:R PROTOFLIGHT /N DUAL_SXX 96-23-1997 HP8753, SSREF, SSREF, SSREF, SSREF, SSCF REFERENCES: LOSS(DB)= 29.54311 PMASE(BEG)= 77.57081 DELAY(US)= .2258519 SLOPE(BLS/NHZ)= 8

BONDPASS CHARACTERISTICS MEASUREMENT

FREQUENCY (MHZ)	LOSS (DB)	PHASE (DEG)
248.600	52.54	701.17
248.768	56.14	1335.77
256, 929	2.62	1875.89
265, 989	-0.02	586, 67
273, 240	0.07	-74,62
281.400	0.84	-654.85
289.560	-0.02	-1225.27
297,720	49.82	-1987.21
305.880	51.85	-1372, 44
314,040	53, 97	-711.24
322, 200	51.24	-77.57
339, 369	49.97	568.76
338, 520	49.80	1248.47
346, 689	46. 39	1874.84
354.840	-8.48	1366,77
363.000	0.21	839, 88
371, 168	-0.06	384, 98
379.320	-8.07	-226, 58
387.480	2.49	-759, 93
395.64 8	44.63	-1943.74
		-10-5.74 -485.56
493.800	46. 53	~460, 30

TESTED BY	RT: 133 : PNRC	1576-1 4 TI	AL TEST BATA SHEET PHONON PART: 1888: TLE: MAR DATE:	23 SERIAL 6 24 97	: <u>P81</u> TIME: <u>(n: 0</u>	2 Av1
TEST: FEN	AL FUNCI	TOWN		CAL DUE		
EQUIPMENT	HP 875	30	SERIAL: 3419497382 SERIAL: 2136493127	— CAL DOE	7/8/97	-
	HP 347	78A	SEKTHL: 2136HB31C/	UAL DOL	1701 51	=
PARAGRI REQ.		REQUIR	REMENT TITLE	DA	ITA	P/F
NIU. 7244	521	NOFRAT	TING TEMPERATURE	35.	6 C	<u>p</u>
3.5.1.1	5 2.3	CENTER	FREQUENCY &			
3.2.1.4	0.2.0	CENTE	R FREEDLENCY STABILITY	•		
2. 2. 1. 1		10: 2	73.335/275.065 NHz	273.	687 MHz	P P
		HT - 3	9.335/371.065 HHz	369.	569 MHz	<u>p</u>
2215	5 2 4		BANDWIDTH:			
3.2.1.3	J.C.T	10. 3	4/36 MHz	34	.755 MHz	<u>p</u>
•			4/36 NHz	35	.832 MHz	P
		MII 3	9/30 MM. AUA CVAMETOV			
3.2.1.6	2.5.2	MASSIA	AND SYMMETRY	a	.2 dB	Ð
:			8.5 dB	•		<u>p</u> <u>p</u>
			0.5 dB	0	.1 ur	<u></u>
3.2.1.7	5.2.6	PASSB	AND RIPPLE			n
		268.7	-287.7 MHz: /1.8 dB		.6 dB	p p
			-383.7 MHz: /1.0 dB	0	.6 CH	<u> </u>
3.2.1.8	5.2.7	INSER	TION LOSS			
		LO: 2	7.8/38.2 dB	_29	.7 dB	P P
		HI: 2	7.8/38.2 dB	_29	.6 dB	<u> </u>
3 2 1.9	5.2.8	INSER	TION LOSS VARIATION			_
3121217	0	10: -	8.4/8.4 dB	_ 6	.2 dB	p p
			-0.4/0.4 dB	- 2	1.9 qB	<u>tı</u>
2 2 1 10	523	OMDI T	TUDE BALANCE			
2.c.1.in	J.L.	10 41	: /0.5 dB	9	3.1 dB	<u>p</u>
20111	5 2 16	ייניטן יי	F-BAND REJECTION		-	
3.0.1.11	O. L. 10	, 66. 1	BAND	PEAK (dB)	WIDTHO	Młz)
		LITTE	: 1-225,429-1998 MHz:	41.7	9.99	8
:		DIE	225.008-249.935,			
		DURL	298.465-345.935,			
			394.465-429.88 MHz:	44.1	9.99	0
:		DEAU.		41.7	dB	<u> </u>
			: 35.8/ dB	71.7		8 MHz P
		WIDT				<u> </u>
3.2.1.12	5.2.1	I SHAM	E FACTOR		1.29_ Unit	less <u>P</u>
,		LU:	/1.30 Unitless			less P
			/1.30 Unitless		1'51 OWI	7533
3.2.1.14	5.2.1	2 VSWR	(RETURN LOSS)	.		
			7-287.7,356.7-383.7 1	#HZ	- JN	6
÷			S11: 7.5/ dB		7.5 dB	<u> </u>
į.			S22: 7.5/ dB		9.6 dB	
4.8.2	5.2.1	4 Lihi	TED FUNCTIONAL TESTS		A 191-	Ð
		CENT	ER FREILLENCY: -8.2/8	2 MHz		7
1	•	3 dB	BANDWIDTH: -0.72/8.	72 MHz _) Milz	1,
:			RTION LOSS: -0.5/8.5	dB	Q dB	<u>r</u>
NONE :	5.2.1	5 Data	SHEET SUMMARY		0	
		(PAS	S/FAIL)		r (1117)	

PHONON (CORPORAT	ION				6Y858
7 HERMA						203-651-8211
SIMSBUR	Y, CT DE	978			FAX:	203-651-8618
	,					

```
PHONON CORPORATION
FILE=1AMBB01A.BAT 11:52:15 05-28-1998
PN_100828_623 FINAL_FUNCTIONAL TEMP:H PROTOFLIGHT /N DUAL_SXX
06-23-1997 HPB753, SSCF, SSFFIX, SSREF
                                             INCR.= .4 SYSTEM BONDWIDTH 27
FREDUENCY (NHZ): CENTER= 274.2 WIDTH= 188
                                                         DELAY (US) = 0 SLOPE (US/MHZ) = 0
REFERENCES: LOSS(DB) = 29.68584
                                 PHASE (BEG) = 3756.221
RMS ERRORS: LDSS(DB)= .1609383 PHASE(DEG)= 1177.843
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED 10 WHZ/DIV
LOSS TO DE/DIV
LOSS 4 DB/BIU -
FREQ 10 MHZ/DIV
PEAK: LEVEL(DB) = 29.26966 FRED(MHZ) = 288.159 DELAY(US) =-.4199465 STRELDRE(BB) =-47.26843
ENERGY: LEVEL (DB) = 29.8592 CENTER (MHZ) = 273.8792 WIDTH (MHZ) = 36.36391 SMEH (MHZ) = -.3276048
                                               WID (MHZ) AV-CTR (MHZ) AV-WIB (MHZ) AV-SL (DB) LOX (MHZ)
                                                                                                          HIX (MHZ)
 L(DB)
          LO(MHZ)
                      HI (MHZ)
                                  CTR(MHZ)
                                                 8.88986
                                                                          8, 99999
                                                                                      0.00
                                                                                             288, 15897
                                                                                                          288. 15897
                                                           288, 15897
                                  288, 15897
                      288. 15897
 -0.42
         288. 15897
                                  273, 99579
                                                31.36716
                                                           274.18561
                                                                         31,24885
                                                                                    -12.72
                                                                                             258.31223
                                                                                                          289.67938
                     289, 67938
  0.50
         258.31223
                                                                         32.26871
                                                                                    -14.06
                                                                                             257,67862
                                                                                                          298.84486
         257.67862
                      290,04486
                                  273,86176
                                                32.36624
                                                           274.61378
  1.00
                                                                                             256.89392
                                                                                                          298.65775
                                                33.76382
                                                           274.00616
                                                                         33.39431
                                                                                    -16.34
  2.00
         256.89392
                     290,65775
                                  273,77582
                                                                         33,82836
                                                                                    -17.71
                                                                                             256. 39994
                                                                                                          291.06464
                                  273, 58729
                                                34.75478
                                                           273, 99506
  3.00
         256.30994
                     291.06464
                                                                                    -19.30
                                                                                             255, 88515
                                                                                                          291.48274
                     291.48274
                                  273,64395
                                                35.51759
                                                           273.97711
                                                                         34.17842
  4.00
         255.88515
  5.00
         255.53421
                     291,69577
                                  273.61499
                                                36, 16156
                                                           273.89679
                                                                         34.33812
                                                                                    -20, 22
                                                                                             255, 53421
                                                                                                          291.69577
                                                                                             255, 24222
                                                                                    -22,23
                                                                                                          291.93625
  6.00
         255, 24222
                     291.93625
                                  273.58923
                                                36.69483
                                                           273.89542
                                                                         34.55976
                     292.72818
                                  273, 55103
                                                38.35431
                                                           273.88837
                                                                         34,81885
                                                                                    -27.83
                                                                                             254.37387
                                                                                                          292, 72818
 10.00
         254.37387
                                  273.50003
                                                                         34, 93242
                                                                                    -38, 43
                                                                                             252, 92145
                                                                                                          294. 87861
 20.00
         252, 92145
                     294.07861
                                                41.15717
                                                           273.87888
                                                                         34.93998
                                                                                    -47.84
                                                                                             251, 99628
                                                                                                          295, 96836
 30.00
         251, 99628
                     295, 06036
                                  273, 52832
                                                43.86489
                                                           273, 87924
                                                                         34.94951
                                                           273.87921
                                                                                    -51.26
                                                                                             251, 16469
                                                                                                          296.85444
 40.00
         251, 16469
                     296.85444
                                  273.68956
                                                44.88976
BAND (MHZ)
            260.700
                      287.798
LMIN(DB)
                   -8.41
LNAX (DB)
                   0.25
LDEL (DB)
                   0.67
PMIN(DEB)
                -2006.45
PMAX (DEG)
                2009, 20
PBEL (DE6)
                 4915.66
File: 1AMBB01A.DAT
                       Passband Symmetry = 0.2 dB
```

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11:36
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PHONON CORPORATION
FILE=1CH8B01A. DAT 11:52:18 85-28-1998
   100828 823 FINAL FUNCTIONAL TEMP:H PROTOFLIGHT /N DUAL_SXX
 __-23-1997 HP8753, SSCF, SSFF1X, SSREF
FREDUENCY (NHZ): CENTER= 370.2 HIDTH= 100 INCR. = .4 SYSTEM BANDAMBTH= 27
                                PHASE (DEB) =-3526.649 DELAY (US) = 0 SLOPE (US/NHZ) = 0
REFERENCES: LOSS(DB) = 29.55032
RMS ERRORS: LOSS(DB)= .1384345 PHASE(DEG)= 1133.931
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FREQ 10 M4Z/DIV
LOSS TO DB/DTV
LOSS 4 DD/DIV
FREG 18 WHZ/DIU
PERK: LEVEL (DB) = 28,87544 FREQ (MHZ) = 355.7528 DELAY (US) = .4848581 SIBELOBE (DB) = -41.8984
ENERGY: LEVEL (DB) =: 29.66413 CENTER (MHZ) == 369.3611 MIDTH (DB)Z) == 36.56918 SMEH (DHZ) == .3615043
                                              HID (MHZ) AV-CTR (MHZ) AV-HID (MHZ) AV-SL (DB) LOX (MHZ)
                                                                                                         HIX (MHZ)
                      HI (MHZ)
 L(DB)
          LO(MHZ)
                                  CTR(MHZ)
                                                8,99999
                                                                                                         355.75284
                      355, 75284
                                  355.75284
                                                           355.75284
                                                                         8. 89008
                                                                                      8, 98
                                                                                             355, 75284
 -0.67
         355.75284
                     385.29068
                                               32.15137
                                                           368, 95923
                                                                        32.34863
                                                                                   -13.18
                                                                                             353, 13931
                                                                                                         385, 29968
  0.50
         353.13931
                                  369.21500
         352,87076
                     385.89523
                                  369.38300
                                               33.82448
                                                           369.13733
                                                                        33.35743
                                                                                   -14.73
                                                                                             352.87076
                                                                                                         385, 89523
  1.00
                                               34.18942
  2.00
         352.40613
                     386.59555
                                  369,50065
                                                           369, 14590
                                                                        33.92386
                                                                                   -15.91
                                                                                             352, 48613
                                                                                                         386.59555
                                  369.56885
                                               35. 83171
  3.00
         352, 05298
                     387.08469
                                                           369, 27286
                                                                        34.61012
                                                                                   -18.10
                                                                                             352, 85298
                                                                                                         387. 88469
                                               35.73880
                                                                                   -19.78
                     387.48132
                                  369, 61591
                                                           369.27563
                                                                        34.94299
                                                                                             351.75852
                                                                                                         387.48132
  4.00
         351.75052
         351.49542
                                               36.37656
                     387.87198
                                  369, 68372
                                                           369, 34546
                                                                        35.07524
                                                                                    -29.68
                                                                                             351, 49542
                                                                                                         387.87198
  5.00
         351.27237
  6.00
                     388.21561
                                               36.94324
                                                          369.34131
                                                                        35, 29198
                                                                                   -22.82
                                                                                             351.27237
                                                                                                         388, 21561
                                  369.74399
                                               38.55048
                                                          369.34766
                                                                        35,52617
                                                                                   -28.84
                                                                                             358, 58278
                                                                                                         389, 13318
         350.58270
                     389.13318
                                  369.85794
 10.00
 20.00
         349.37244
                     390, 52000
                                  369.99622
                                               41.24756
                                                          369, 36957
                                                                        35,61662
                                                                                   -39, 48
                                                                                             349.37244
                                                                                                         390,62000
                                                          369.36084
                                                                        35,62192
                                               43, 25522
                                                                                   -46.22
                                                                                             348.38397
 30.00
         348.38397
                     391.63919
                                  378.01168
                                                                                                         391.63919
                                                                                   -48, 25
         347.70895
                     392, 18845
                                  369, 94878
                                               44.47949
                                                          369.36881
                                                                        35.62245
                                                                                            347.70895
                                                                                                         392, 18845
 40.00
BAND (MHZ)
            356.700
                     383. 790
LMIN(DB)
                  +0.33
LINAX (DB)
                   0.29
LEEL (DB)
                   8.62
PMIN(DEG)
               -1939.27
   '(DES)
                1931.24
   (DEG)
                3878.51
File: ICHEBBIA. DAT.
                       Passband Symmetry = 0.1 dB
```

Channel 12 Bandpass Filter

SAW Filter (S/N: 1331576-2, S/N: B01)

ELECTRICAL TEST DATA SHEET

	AF55 7F7	SART 4	ELECTRICAL TEST DATA SHEET		
	REMUJE I	$V = O_{\Delta} C$	31576-2 PHONON PART: 188824 S	ERIAL: B01	
	IESIEN R	II POR	GATITLE: MGR DATE: 6/24	19/11/E: 10:00 AV	'
	TEST: FI			· NE-10/10/03	
	EQUIPMEN			DUE: 19/12/97	
		n⊬. 34	178A SERIAL: <u>2136A83127</u> CA	L DUE: 7/8/97	
	PARAG	rafh	REQUIREMENT TITLE	DATA	P/F
	REQ.	Q/ATP			
	3.2.1.1	5.2.1	OPERATING TEMPERATURE	<u>-4.7</u> C	<u>p</u>
	3.2.1.3	5.2.3	CENTER FREQUENCY &	 .	
	3.2.1.4		CENTER FREQUENCY STABILITY		
			LO: 299.335/301.065 MHz	300.449 MHz	þ
			HI: 343.335/345.065 MHz	344.329 MHz	F
•	3.2.1.5	5.2.4	3 db BANDWIDTH:		<u> </u>
* .			LO: 15/16 MHz	15.436 MHz	p .
		,	HI: 15/16 MHz	15.480 MHz	p .
	3.2.1.6	5.2.5	PASSBAND SYMMETRY		
			LO: /0.5 dB	0.1 dB	D
			HI: /0.5 dB	9.1 dB	p p
	3.2.1.7	5.2.6	PASSEAND RIPFLE		
	0,2,1,1	016.0	294.2-306.2 MHz: /1.0 dB	0.4 dB	D.
			338.2-350.2 MHz: /1.0 dB	9.4 dB	<u>Р</u>
	7 2 1 0	507	INSERTION LOSS	<u>0.4</u> un	<u> </u>
	J.C.IIO	J. L. /	LO: 27.8/38.2 dB	00 4 Jn	D
			HI: 27.8/30.2 dB	29.4 dB	p p
	2010	E 2 A		23.7 dB	<u> </u>
	3.6.1.7	3.2.8	INSERTION LOSS VARIATION	0.4 1 10	
			LO: -0.4/0.4 dB	<u>-0.1</u> dB	<u>p</u>
	70440		HI: -9.4/0.4 dB	dB	<u> </u>
	3.2.1.10	5.2.9	AMPLITUDE BALANCE		_ `
			LO,HI: /0.5 dB	<u>0.3</u> dB	p
	3.2.1.11	5.2.10	OUT-OF-BAND REJECTION		11 11 11
•			BAND PEAK (d		
			WIDE: 1-286,359-1000 MHz: 39.8	0.018	
			DUAL: 286.000-288.935,	the product of the second	
			311.465-332.935,	1.74	
			355.465-359.00 MHz: 42.9	<u>0.003</u>	
			PEAK: 35.0/ dB <u>39.8</u>	q <u>R</u>	<u>F</u>
			WIDTH: /3.2 MHz	0.018 MHz	<u>p</u>
	3.2.1.12	5.2.11	SHAFE FACTOR		
			LO: /1.30 Unitless	1.28 Unitless	<u>p</u>
			HI: /1.30 Unitless	1.30 Unitless	P
	3.2.1.14	5.2.12	VSWR (RETURN LOSS)		
			294.2-306.2,338.2-350.2 MHz		
			DUAL S11: 7.5/ dB	8.9 dB	Þ
			DUAL S22: 7.5/ dB	8.6 dB	طبط احات
	4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS		
	-	·	CENTER FREQUENCY: -8.2/0.2 MHz	(7) MHz	Ρ
			3 dB BANDWIDTH: -0.32/0.32 MHz	MHz	<i>₽</i> -
			INSERTION LOSS: -0.5/0.5 dB	dB	φ
	NONE	5, 2, 15	DATA SHEET SUMMARY		
		0.1.10	(PASS/FAIL)	P(GP)	
			M (120/1 FIL)		
	PHONON CO	RECRATIC	F4	CAGE: 6Y858	
	7 HERMAN I			TEL: 203-651-6	0211
	SIMSBURY,	CT 0507	8	FAX: 203-651-6	
	•		·		-

```
FILE=2AC8B01A.DAT 15:37:45 06-23-1997
 PN 100830_824 FINAL_FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL SXX
 06-23-1997 HP8753, SSCF, SSFFIX, SSREF
FREQUENCY (MHZ): CENTER= 300.2 WIDTH= 39.84 INCR.= .12 SYSTEM RANDWIDTH= 12
REFERENCES: LOSS (DB) = 29.4215 PHASE (DEG) = 5401.561 DELAY (US) = 0 SLOPE (US/NS/Z) = 0
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FREQ 3.984 MHZ/DIV
FORE IE DENDIA
LOSS-1-DB/BIU--
FREQ 3.984 MHZ/DIU
PEAK: LEVEL(DB) = 29.15234 FREQ(MHZ) = 306.7387 DELAY(US) =-1.378225 SIDELOBE(DB) =-48.24511
L(DE)
         LO(MHZ)
                    HI (MHZ)
                               CTR (FHZ)
                                          WID(MHZ) AV-CTR(MHZ) AV-WID(MHZ) AV-SL(DB) LOX(MHZ)
                                                                                               HIX (MHZ)
 -0.27
        396.73868
                   306.73868
                               326.73868
                                           0.09988
                                                     366.73868
                                                                  0.00000
                                                                            0.00
                                                                                   306.73868
                                                                                               305.73868
  0.50
        293.59897
                   387.53558
                               308,56726
                                          13.93661
                                                     300.57224
                                                                 14.02696
                                                                           -12.47
                                                                                   293.59897
                                                                                               307.53558
  1.09
        293.27795
                   307.71042
                               300.49420
                                          14.43246
                                                     300.52118
                                                                 14.32786
                                                                           -13.38
                                                                                   293.27795
                                                                                               307.71842
        292,93648
                   307.96658
                               303.45148
  2.08
                                          15.03018
                                                                 14.76325
                                                     390.47717
                                                                           -15.29
                                                                                   232,93640
                                                                                               307.96658
  3.63
        292,73138
                   308.16709
                               399.44922
                                          15.43570
                                                     339.47883
                                                                 15.03417
                                                                           -17.21
                                                                                   292,73138
                                                                                               398.16798
  4.03
        292.56427
                   398.31799
                               366, 44113
                                          15.75372
                                                     388,47884
                                                                 15.14179
                                                                           -18.30
                                                                                   232.56427
                                                                                               338, 31799
 5.93
        292.42438
                   308.44991
                               392,43665
                                          16.02454
                                                     338.47899
                                                                15.23399
                                                                           -19.49
                                                                                   232,42438
                                                                                               308.44891
 6.88
        292,29880
                   308.56210
                               300,43045
                                          16.26331
                                                     392.47748
                                                                15.30314
                                                                           -20.81
                                                                                   232,29889
                                                                                               308.56210
        291.92276
10.00
                   308.93188
                              300.42731
                                                     399.47528
                                                                 15.43575
                                                                           -25.54
                                          17.00312
                                                                                   291.92276
                                                                                               308.93188
20.00
        291.30795
                   369.52463
                              300.41629
                                                                15.49629
                                          18.21667
                                                     300.47238
                                                                           -37.79
                                                                                   291.30795
                                                                                               309.52463
32.00
        290.84985
                   309.98573
                              399.37781
                                          19.05588
                                                     399.47269
                                                                 15.49942
                                                                           -46.33
                                                                                   290.84985
                                                                                               309.90573
48.03
        290.44342
                   310.22372
                              300.33356
                                          19.78939
                                                     300.47266
                                                                 15.49981
                                                                           -53.10
                                                                                   298,44342
                                                                                               310.22372
           294,200
BAND (MHZ)
                    305.209
LMIN(DE)
                -0.17
LMAX (DB)
                 0.25
LDEL (DB)
                 0.42
PMIN (DEG)
              -2375.39
              2988.49
PMAX (DEG)
              5956.48
PDEL (DEG)
```

PHONON CORPORATION

File: 2AC8B81A.DAT

Passband Symmetry = 0.1 dB

```
FILE=2008B01A.DAT 15:38:33 06-23-1997
  PH 188838 824 FINAL FUNCTIONAL TEMP: C PROTOFLIGHT /N DUAL SXX
  86-23-1997 HP8753, SSCF, SSFFIX, SSREF
  FREQUENCY (MHZ): CENTER= 344.2 WIDTH= 39.84 INCR.= .12 SYSTEM BANDWIDTH= 12
                                                                    PHASE (DEG) = -5634,118 DELAY (US) = 0 SLOPE (US/MHZ) = 0
  REFERENCES: LOSS(DB) = 29.71766
  RMS ERRORS: LOSS(DB)= .1311423 PHASE(DEG)= 1713.754
  PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FREQ 3.984 MHZ/DIV
  FORE LE. DBADIA
                                                                     MANNEY TO THE PROPERTY WAS A STATE OF THE PARTY OF THE PA
  LOSS 1 - DB/BIV ..
 FREQ 3.904 MHZ/DIV
 PEAK: LEVEL(DB) = 29.44712 FREQ(MHZ) = 339.9867 DELAY(US) =-1.370759 SIDELORE(DB) =-42.30923
EMERGY: LEVEL (DB) = 29.93619 CENTER (MHZ) = 344.2504 WIDTH (MHZ) = 16.24665 SKEW (MHZ) = .1569017
  L(DE)
                     LO(MHZ)
                                             HI (MHZ)
                                                                     CTR (FHZ)
                                                                                             WID (FEHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DE) LOX (MHZ)
                                                                                                                                                                                                                   HIX (MHZ).
  -9.27
                   339.98669
                                           339.98669
                                                                     339.98669
                                                                                               9.89399
                                                                                                                      339.98669
                                                                                                                                                  0.00020
                                                                                                                                                                           0.00
                                                                                                                                                                                         339.98569
                                                                                                                                                                                                                   339.98669
                   337.38306
                                            351.15134
                                                                     344.26721
    0.59
                                                                                               13.76828
                                                                                                                      344.17712
                                                                                                                                                13.61221
                                                                                                                                                                       -11.54
                                                                                                                                                                                         337.38395
                                                                                                                                                                                                                   351.15134
    1.69
                   337.14566
                                            351.46109
                                                                     344,39338
                                                                                                                      344.23267
                                                                                               14.31543
                                                                                                                                                14.12671
                                                                                                                                                                       -12.88
                                                                                                                                                                                          337.14566
                                                                                                                                                                                                                   351.46109
                   336.83749
                                            351.83725
    2.03
                                                                     344.33737
                                                                                               14.99976
                                                                                                                      344.23450
                                                                                                                                                14.64639
                                                                                                                                                                      -14.93
                                                                                                                                                                                         336.83749
                                                                                                                                                                                                                   351.83725
                   336.58932
                                            352.86949
    3.00
                                                                     344.32341
                                                                                               15.48916
                                                                                                                      344.23749
                                                                                                                                                14.91914
                                                                                                                                                                       -16.64
                                                                                                                                                                                                                   352.06949
                                                                                                                                                                                         336.58932
                                            352,23688
    4.83
                   335.40839
                                                                     344.32263
                                                                                               15.82849
                                                                                                                      344.23877
                                                                                                                                                15.83933
                                                                                                                                                                      -17.61
                                                                                                                                                                                         335.40839
                                                                                                                                                                                                                   352,23688
    5.09
                   336.26553
                                            352.39838
                                                                     344.33197
                                                                                               16.13284
                                                                                                                      344.24242
                                                                                                                                                15.20487
                                                                                                                                                                      -19.89
                                                                                                                                                                                         336.26553
                                                                                                                                                                                                                   352.39838
    6.00
                   336.14999
                                           352.54013
                                                                     344.34586
                                                                                                                      344.24225
                                                                                               16.39014
                                                                                                                                                15.26926
                                                                                                                                                                      -21.17
                                                                                                                                                                                         336.14999
                                                                                                                                                                                                                   352.54013
                                           352,92813
  10.00
                   335.74673
                                                                     344.33743
                                                                                               17.18149
                                                                                                                     344.24677
                                                                                                                                                15.38877
                                                                                                                                                                      -25.75
                                                                                                                                                                                         335.74673
                                                                                                                                                                                                                   352.92813
  20.00
                  335.12354
                                           353,57665
                                                                                                                     344.25957
                                                                                                                                                                      -37,17
                                                                     344.34711
                                                                                                                                                15.44525
                                                                                               18.44711
                                                                                                                                                                                         335.12354
                                                                                                                                                                                                                   353.57065
  33.68
                  334.68348
                                           354.05893
                                                                                                                      344.25924
                                                                     344.37421
                                                                                               19.35945
                                                                                                                                                15.44869
                                                                                                                                                                       -44.79
                                                                                                                                                                                         334.68948
                                                                                                                                                                                                                   354.65893
  40.62
                  334.08075
                                           354.26572
                                                                     344.17322
                                                                                                                      344.25918
                                                                                                                                                15.44898
                                                                                                                                                                       -46.18
                                                                                               20.18497
                                                                                                                                                                                         334.08075
                                                                                                                                                                                                                   354.26572
BAND (MYZ)
                        338.200
                                             350.209
                                     -0.27
LMIN(DB)
LMAX (DB)
                                       0.30
LDEL (DB)
                                       0.57
PMIN(DEG)
                               -2936.34
PHAX (DEG)
                                2940.95
PDEL (PEG)
                                5877.29
```

PHONON CORPORATION

File: 2008R91A.DAT

Passband Symmetry = 0.1 dB

									•••
		ELECTRICAL TEST DATA SH	EET						
AEROJET	PART: 1	331576-2 PHONON PART: 10082-		81					
TESTED 1	BY: DOG	CA TITLE: MCR DATE: (וז ראוויכל	ME: 105-20 4	4.1				
TEST. F	INAL FUN	CTIONO!	4 CAL-1-1- 11	111-0-10-011 F	2 n				
		753D SERIAL:3419997992	COL TURAL	0.440.407					
EKOTLUCI									
	H⊩ 3	478A SERIAL: <u>2136AØ3127</u>	CAL DUE: <u>7</u>	<u> 78797 </u>					
						•			
Para	3RAPH	REQUIREMENT TITLE	Data		P/F				
REQ.	Q/ATP								
3.2.1.1	5.2.1	OPERATING TEMPERATURE	15.8	C .	Þ				
		CENTER FREQUENCY &			<u> </u>				
3.2.1.4		CENTER FREQUENCY STABILITY							
J. C. 1. 7			200 23	n 1411.	_				
		LO: 299.335/301.065 MHz	<u>399.33</u>		· <u>- P</u>				
	:	HI: 343.335/345.065 MHz	344.20	4 MHz	<u> </u>				
3.2.1.5	5.2.4	3 db Bandwidth:		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -					
1		LO: 15/16 MHz	15.42	9 MHz	Р				
		HI: 15/16 MHz		9 MHz	p				
3.2.1.6	5.2.5	Passband Sympetry		- :					
		LO: /0.5 dB	R 1	₫B	n				
		HI: /0.5 dB			<u>p</u>				
3043			0.1	dB	<u> </u>				
3.2.1.7	5.5.6	PASSBAND RIPPLE							
		294.2-306.2 MHz: /1.0 dB	<u> 8.4</u>	dB	<u>p</u>				
		338.2-350.2 MHz: /1.0 dB	8.4	d₿	p		ē		•
3.2.1.8	5.2.7	INSERTION LOSS		- .		• '	•	•	
		LO: 27.8/30.2 dB	29.6	dB	D				. •
•		HI: 27.8/30.2 dB	29.6	− dB	<u>p</u>		* .		
2219	500	INSERTION LOSS VARIATION		_ 00	 ,		•		+
3.6.1.7	3.6.0		0.0	195.					
		LO: -0.4/0.4 dB	0.0	— qB	P				
		HI: ~-0.4/0.4 dB	0.8	dk	<u>p</u>				
3.2.1.10	5.2.3	AMFLITUDE BALANCE							
		LO,HI: /0.5 dB	0.1	dB .	р	* .			
3.2.1.11	5.2.19	OUT-OF-BAND REJECTION		_			•	* - **	
		BAND PI		WIDTH (MHz)	· Virg.		ort in Selection Th		e engelse See seet
		WIDE: 1-286,359-1000 MHz:		0.020		* * * * * * * * * * * * * * * * * * * *		ada tagirtaga	
			70.1	0.000					2 P. C.
		DUAL: 286.000-288.935,		t same				2.3	S. P.
		311.465-332.935,			•				
	•	355.465-359.00 MHz: _		0.000					•
		FEAK: 35.0/ dB	49.1 dB		þ				
		WIDTH: /3.2 MHz		0.000 MHz	P				
3.2.1.12	5.2.11	SHAFE FACTOR							
		LO: /1.30 Unitless	1 28	Unitless	Р.,	/			•
		HI: /1.30 Unitless		Unitless	FB				
2 2 1 1/	5 2 12	VSWR (RETURN LOSS)	1.01	_ 011111622	-				
3. 6. 1. 14	J.C.1C								
		294.2-305.2,338.2-350.2 MHz							
		DUAL S11: 7.5/ dB	8.7	_ dB	<u>b</u>				
		DUAL 522: 7.5/ dB	8.6	dΒ	Þ				
4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS		=		~			
		CENTER FREQUENCY: -8.2/0.2 MH	1z -0,005	MHz	? (D	P)			
		3 dB BANDWIDTH: -0.32/0.32 MH			7	>			•
			" NING 1	_	<u></u>				
HOUL		INSERTION LOSS: -0.5/0.5 dB		_ dk	4		~ ~	-0	
NONE	5.2.15	DATA SHEET SUMMARY		60		1 A-	: T : 21	- V	_
		(PASS/FAIL)		WY)		4-11	٠	_	
						~ A A A	I Pa e (97 97	126) / \
PHONON CO	RPORATIO	DN .	(CAGE: 6Y858		ひりまり	~ (4 /	020	' /)
7 HERMAN	DRIVE			TEL: 203-651-	-0211	•			.1
SIMSBURY,		78		AX: 203-651-			47	-03	4
			. '	IN FOO OUT	2010				(B)

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FN 100839 824 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL SXX
 06-23-1997 HP8753, SECF, SSFFIX, SSFEF
 FREGUENCY (MHZ): CENTER= 300.2 WIDTH= 39.84 INCR.= .12 SYSTEM BANDWIDTH= 12
 REFERENCES: LOSS(DB) = 29.55832 PHASE(DEG) = 4992.356 DELAY(US) = 0 SLOPE(US/MHZ) = 0
 RMS ERRORS: LOSS(DB) = 9.354889E-82 PMOSE(DEG) = 1737.879
 PLOT SCALES: LOSS 18 DB/DIV LOSS 1 DB/DIV VS. FREG 3.984 MHZ/DIV
 LOSS TO IDVDIV
FREQ 3.904 KGZZDIU
PEAK: LEVEL(DB)= 29.38834 FREG(MHZ)= 306.612 DELAY(US)=-1.379663 SIDELOBE(DB)=-47.85617
HI (MHZ) CTR (MHZ) WID (MHZ) AV-CTR (MHZ) AV-VID (MHZ) AV-SL (DP) LOX (MHZ)
 L(DB)
        LO (MHZ)
                                                                                            HIX (MHZ)
 -0.25
        325.61223
                  396.61203
                            396.61223
                                        8.20000 395.61283 8.82020 8.80 395.61283
                                                                                            385.61283
  0.58 293.47699 307.40494 308.44898
                                       13.52755
                                                   392,43970
                                                               14.61482
                                                                        -12.59 293.47699
  1.00 293.16241
                   327.58266
                              302.37152
                                        14.41824
                                                   339.39858
                                                              14.31412
                                                                        -13.41
                                                                                 293.16241
                                                                                            397.58866
  2.03 232.82474
                   397.84238
                              323, 33355
                                         15.01764
                                                   339.34464
                                                              14.74785
                                                                        -15.33 292.82474
                                                                                            397.84238
  3.00 292.61517
                   308.04446
                              392.32983
                                         15.42929
                                                   382.34583
                                                              15.01770
                                                                        -17.26 292.61517
                                                                                            308.04446
  4.08 292.45835
                   368.19373
                              300.32222
                                         15.74338
                                                   339.34616
                                                               15.12464
                                                                         -18.35 292.45035
                                                                                            389.19373
  5.00 292.31171 398.32465
                              309.31818
                                         16.81234
                                                   300.34607
                                                              15.21391
                                                                         -19.55 292.31171
                                                                                            388.32465
                              303.31177
  6.63
       292.18546 308.43811
                                         16.25266
                                                   388.34578
                                                              15.28441
                                                                         -20.85 292.18546
                                                                                            308.43611
       291.80917
291.19211
 12.03
                   398.89884
                              392.39982
                                         16.93966
                                                              15.41554
                                                                         -25.61
                                                   399.34384
                                                                                 231.86917
                                                                                            308.89884
 20.03
                   339.48512
                              389, 29861
                                         18.21381
                                                   300.34119
                                                              15.47511
                                                                         -37.86 291.19211
                                                                                            389,48512
       290.73825
 30.23
                                         19.84279
                   309.78104
                              389.25964
                                                   393.34149
                                                              15.47818
                                                                        -46.28 299.73825
                                                                                            339.78104
48.60 298.31467 318.12796
BAND (MHZ) 294.200 386.200
                              383.22131
                                         19.81329 383,34146
                                                              15.47857
                                                                         -52.78 293.31467
LMIN(DB) -0.17
LHAX (DE)
              0.25
LDEL (DB)
               0.42
Ffilit (DEG)
             -2977.23
FREX (DES)
            2981.86
FIEL (DEG)
            5959.12
File: 2AR8B91A.DAT Passband Symmetry = 8.1 dB
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FHONON CORPORATION FILE=2AR8801A.DAT 15:50:56 06-23-1997

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FILE=2CR8R01A.DAT 15:51:51 06-23-1997
 PN_103838_824 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX
 06-23-1997 HP8753, SSCF, SSFFIX, SSREF
 FREQUENCY (MHZ): CENTER= 344.2 WIDTH= 39.84 INCR.= .12 SYSTEM RANDWIDTH= 12
                               PHASE (DEG) =-4970.821 DELAY (US) = 0 SLOPE (US/MHZ) = 0
 REFERENCES: LOSS(DB) = 29.6303
 PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FREQ 3.984 MHZ/DIV
 FORE, LO. BENDLA.
                               "My water which was writing
FFER 3.904 MIZZDIV
PEAK: LEVEL(DE) = 29.36111 FREQ(MHZ) = 339.8394 DELAY(US) =-1.367148 SIDELDSE(DE) =-42.59253
ENERGY: LEVEL (DB) = 29.84749 | CENTER (MHZ) = 344.1272 | WIDTH (MHZ) = 16.23951 | SKEW (MHZ) = .1545455
 L(DP)
                                            WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LCX (MHZ)
          LO(KHZ)
                     HI (MHZ)
                                CTR (HHZ)
                                                                                                     HIX(KYZ)
 -0.27
                     339.83942
         339.83942
                                339.83942
                                              9.66669
                                                        339.83942
                                                                     0.03000
                                                                                  9.99
                                                                                         339.83942
                                                                                                     339.83942
  0.59
         337.35111
                     351.03169
                                344.19641
                                             13.67058
                                                         344.11145
                                                                     13.58933
                                                                                -11.32
                                                                                         337.36111
                                                                                                     351.63159
                                344.18542
  1.00
         337.03918
                     351.33170
                                             14.23251
                                                        344.11398
                                                                     14.13231
                                                                                -12.93
                                                                                         337.03918
                                                                                                     351.33178
  2.53
         335.71663
                     351.71148
                                344.21375
                                             14.99542
                                                        344.11575
                                                                     14.64943
                                                                                -14.95
                                                                                         336.71683
                                                                                                     351.71146
  3.89
         336.46978
                     351.93875
                                344.20422
                                             15.46996
                                                        344.11847
                                                                     14.92055
                                                                                -15.67
                                                                                         336,46970
                                                                                                     351.93875
  4.03
         336.28769
                     352,10520
                                344.19696
                                             15.81851
                                                        344.11920
                                                                     15.23167
                                                                                -17.64
                                                                                         336.28769
                                                                                                     352,10620
  5.69
         336.14139
                    352.27289
                                344.20678
                                             16.13080
                                                        344.12012
                                                                     15.28484
                                                                                -19.92
                                                                                         336.14139
                                                                                                   352.27209
         336.02435
  6.03
                    352,41649
                                344.21738
                                             16.38695
                                                        344.12152
                                                                     15.26916 - -21.22
                                                                                         336.02435
                                                                                                     352,41848
 19.93
         335,62207
                     352.79425
                                344.22815
                                             17.17218
                                                        344.12476
                                                                     15.38723
                                                                                -25.79
                                                                                         335.62207
                                                                                                     352.79425
                                344.21555
 23.63
         334.99344
                    353, 43326
                                             18.43451
                                                        344.12666
                                                                     15.44281
                                                                                -36.64
                                                                                         334.99844
                                                                                                     353.43326
 39.99
         334.55435
                    353.92563
                                344.23999
                                             19.37128
                                                        344.12704
                                                                     15.44667
                                                                                -44.65
                                                                                         334.55435
                                                                                                     353.92563
                    354.12623
         333.91367
 49,63
                                344.91685
                                             28.20536
                                                        344.12698
                                                                     15.44687
                                                                                -45.64
                                                                                         333.91357
                                                                                                     354.12383
           338.223
                    350.288
BAND (MHZ)
LMIN(DB)
                 -9.26
FLYX (DB)
                  9.28
LDEL (DE)
                  9.54
FITTH (DEG)
               -2733.33
               2343,13
PLAX (TES)
PIEL (DES)
File: 20R8991A.DAT
                  Passtand Symmetry = 0.1 dB
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FILE=2ER8B01A.DAT 15:52:43 06-23-1997
 PN_108830_824 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N WIDE S21
 85-23-1997 HF8753, SSREF, SSREF
 FREQUENCY (M-Z): CENTER= 500.5 WIDTH= 999 INCR.= .200125 SYSTEM BANDWIDTH= 999
 FMS ERRORS: LOSS(DB)= 12.2387 PHRSE(DEG)= 13191.33
 PLOT SCALES: LOSS 10 DB/DIV VS. FREQ 99.9 MHZ/DIV
 FOSS. I.G. DENDLA.
                                                      照取 29,9 增是的以...
PEAK: LEVEL(DB) = 29.31631 FREQ(MHZ) = 339.846 DELAY(US) =-1.876621 SIDELOBE(DB) =-49.34791
     L(DB)
                                                                            HIX (MHZ)
 -0.28
                                                                            339.84591
 0.50
 1.83
 2.63
                                                                            351.70532
 3.63
                                                                            351,92853
 4.69
                                                                            352.09735
 5.93
                                                                            352.26944
 6.99
                                                                            352.40741
10.00
                                                                            352.79348
29.89
                                                                            353,42972
                                                                            353, 93289
42.82 333.91385 354.10863 344.81893 28.1957 BAND(KHZ) 1.800 285.830 359.800 1880.800
         49.43 -0.26 40.07
LMIN(DB)
          87.79 77.49 71.33
38.35 77.77 31.26
LMAX (DB)
LDEL (DB)
           7917.23 -8669.64 -8442.52
PHIN (DEG)
           9999.00 8328.52 9999.03
           2325.77 16978.13 18439.52
PDEL (DEG)
FILE: 2ER8381A.DAT Out-of-band Rejection: PEAK= 40.1 dB WIDTH= 0.000 MHz
```

FILE=2FR8B01A.DAT 15:53:05 04-23-1997 PN_100830_824 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL SXX 66-23-1997 HP8753, SSREF, SSREF FREQUENCY (MHZ): CENTER= 322.2 WIDTH= 84.% INCR.= .12 SYSTEM BANDWIDTH= 85 RMS ERRORS: LOSS(DP) = 24.74445 PMASE(DES) = 1573.233 PLOT SCALES: LOSS 18 DB/DIV VS. FREQ 8.495 MHZ/DIV TOSS. IG. IDANÍA FREG. 8.496 MIZZDIU . . . PEAK: LEVEL(DB) = 29.2958 FREQ(MHZ) = 336.6145 DELAY(US) = 7.362926E-82 SIDELOBE(DB) = 42.34831 WID(THZ) AV-CTR(THZ) AV-WID(THZ) AV-SL(DE) LOX(THZ) L(DB) LO (MHZ) HI (MHZ) CTR (MHZ) HIX (NHZ) -0.30 385.61453 386.61453 305.61453 0.23398 385.61453 0.03003 0.03395,61453 395.61453 9.59 293.45941 307,41647 322.43793 13.95788 339.42188 14.92406 -6.24 293.45941 350.99902 1.00 293,14554 387,58993 322, 35774 14.44437 328, 37256 14.52831 -6.34 293.14554 351.31345 2.09 292,81180 387.85916 392.33893 15.03336 300.37057 14.87623 -6.43 292.81183 351.72151 3.63 232,68854 308,05972 389.32968 15.44208 303.35578 15.14217 -6.45 232.69364 351.93451 303.19394 4.23 292.44452 399.32172 15.75443 329.36391 15.24969 -6.46 292.44452 352.09955 5.69 292.30615 388.32864 389.31738 16.02249 388.33968 15.37751 -6.47 232.30515 352.26767 15.44169 6.83 292,18130 398.44223 329.31177 16.26993 300.34035 -6.48 292.18130 352.48631 19.63 231.88718 399.81161 383.38935 17.83452 388,34149 15.55632 -€.45 291.83710 352,73117 15.62492 -6.40 291.19131 23.63 291.19131 309.40543 390.29889 18.21512 322.34161 353.43152 30.66 290.73657 15.68716 309.78259 333, 25958 19.84662 388.34146 -5.34 298.73657 353, 92477 292,31256 -6.29 292.31256 312,12622 388.21939 19.31355 333.34143 15.69742 354.13248 294.228 386.288 333.288 358.288 BAND (BHZ) LMIN(DB) -0.19 -3.32 -0.27 LMAX (DB) 0.21 65.12 0.34 LDEL (DB) 9.49 65.41 0.61 PTILITIES) -2021.43 -3014.24 -421,95 Palkides) 783,95 3225.75 2235.99 FOEL (DEG) 2785.35 6239.99 2788.94 FILE: EFRERSIA.DAT Out-of-band Rejection: PEGK= 42.1 d3 WIDTH= 0.000 NHz

FHONON COSPORATION

FILE: 2FR8E01A.DAT (+SSCF)

Liver to the control of the control

PN_100830_824 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX 06-23-1997 HP8753, SSREF, SSREF, SSCF
REFERENCES: LOSS (DB) = 29.59431 PMASE (DEG) = -138.6753 DELAY(US)= .7281229 SLOPE(US/KHZ)= 8

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المراكب والمراجع والمناه والمراجع		The Problem Control of the Control o

FREQUENCY (MHZ)	LOSS (DB)	PHASE (DEG)
285.488	62.86	1256.44
289.889	64.03	1553.03
292.768	2.23	1110.18
296.449	-0.10	246.03
300.120	-0.12	-616.69
393.899	9.18	-1479.31
307.480	8.67	-2349.89
311.160	51.28	-2745.52
314.849	57.09	-1823.63
318.529	50.42	-825,64
322.200	49.79	138.68
325.880	47.67	1114.91
329.569	53.43	2369.85
333.240	45.93	3829.93
336.920	1.27	2594.71
349,699	-0.17	1755.13
344.280	-8.05	916.21
347.960	0.11	76.71
351.649	1.75	-758.58
355.320	46.08	-1264.82
359.020	43.69	-318.81
		210.01

Company of the Compan

			ELECTRICAL TEST DATA SHEET						
	AEROJET I	PART: 13	31576-2 PHONON PART: 100824,	SERIAL: BO1				•	
	TESTED BY	1: POR	GA TITLE: MAR DATE: 6/29	1197 TIME:	10:00 Art	4			
	TEST: FI								
	EQUIPMENT	T: H₽ 87	53D SERIAL:3418A07982 C	AL DUE: 10/1	2/97				
		HP 34	78A SERIAL:2136AB3127 C	AL DIE: 7/8/	97				
<u> </u>		•							
	PARAGE	AFH.	REQUIREMENT TITLE	DATA	{	P/F			
	REQ.	Q/ATP	•						
	3.2.1.1		OPERATING TEMPERATURE	35.6	C	<u>p</u>			
			CENTER FREQUENCY &		-				
	3.2.1.4		CENTER FREQUENCY STABILITY						
			LO: 299.335/301.065 MHz	300.217	MHz	p			
		٠.	HI: 343.335/345.065 HHz	344.087		P			
	3.2.1.5	5.2.4	3 dB BANDWIDTH:		, and the second		• .		
			LO: 15/16 MHz	15.422	PHz	p .			
			HI: 15/16 MHz	15.454	MHz	<u>p</u>			
	3.2.1.6	5.2.5	PASSBAND SYMMETRY		•			:	
			LO: /0.5 dB	0.8	dB	p			
			HI: /0.5 dB		dB	P P			
	3.2.1.7	5.2.6	PASSBAND RIPPLE		•				
	OILIA.	OILIO	294.2-305.2 MHz: /1.0 dB	8.4	dB	D			
			338.2-350.2 MHz: /1.0 dB		dB	P P			
	3.2.1.8	527	INSERTION LOSS		-		-	_	
	3, 1, 1, 0	U.L.I	LO: 27.8/30.2 dB	23.8	4Th	D		•	
			HI: 27.8/30.2 dB		dB	<u>p</u>			
	3.2.1.9	529	INSERTION LOSS VARIATION		٠	<u></u>			
	3.6.1.3	7.0.0	LO: -0.4/0.4 dB	0.2	dB ·	D.			
			HI: -0.4/0.4 dB		dB .	<u></u>			
	7 7 1 10	E 2 0	AMPLITUDE BALANCE	-8.8	JD -	<u>.r_</u>			
	2.5.1.10	J.C.J		0.1	dB ·	ก			
	22444	5 2 10	LO, HI: /0.5 dB	0.1		<u> </u>	en e		
	3.2.1.11	3.2.10	OUT-OF-BAND REJECTION	/JTN 1111	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	" - .			$\mathcal{M}_{p,p}(p) = \mathcal{M}_{p}(p)$
A		-3.**	HAND PEAK		OTH (MHz)		rang si 🖓		0 N - 2 -
	•	-	•	<u>7. </u>	3.064	· * • • • .			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
			DUAL: 286.000-288.935,	· 12.1					
	9.00		311.465-332.935,			. :			
			355.465-359.09 MHz: 42.0		3.000	ъ			
			PEAK: 35.0/ dB 39.1			<u> </u>			
	20445	E 0 44	WIDTH: /3.2 MHz		3.064 MHz _	۲۰			
	3.2.1.12	5.2.11	SHAPE FACTOR	4.00		r .			
			LO: /1.30 Unitless	<u>1.28</u> t		<u>μ</u> ./			
	2011	F 0 40	HI: /1.30 Unitless	<u>1.31</u> l	WILIESS -	<u>+</u>			
	3.2.1.14	5.2.12	VSWR (RETURN LOSS)					•	
			294.2-306.2,338.2-350.2 MHz		10.	_			
			DUAL S11: 7.5/ dB		IB _	P P			
			DUAL S22: 7.5/ dB	8.7	IB	<u>h</u>			
	4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS	~ .)			
			CENTER FREQUENCY: -0.2/0.2 MHz		Hz /				
			3 dB BANDWIDTH: -0.32/0.32 MHz		Hz 💃	5			
			INSERTION LOSS: -0.5/0.5 dB	() (B _				
	NONE	5.2.15	DATA SHEET SUMMARY	<u> </u>		•	" AT	PER	
			(PASS/FAIL)	(VY)		U-A-I	/ []	
							SAMR	97-02-	-01)
	PHONON CO		DN .		£: 6Y858		JUNK	11700	
	7 HERMAN I		-		: 203-651-02	211		97-03	:4
	SIMSBURY,	CI 0607	ଧ	FAX	: 203-651-86	18			(EE)
			•						//

<mark>adi Belgaras palmeras al la cer</mark> salembrana (lega desenvaca de la como en la como en la como en la como en la co

PHONON CORPORATION FILE=2AHSB31A.DAT 16:04:38 06-23-1997 PM_189830_824 FINAL_FUNCTIONAL NEW-HA PROTOFLIGHT /N MYGY_SXX 26-23-1997 HP8753, SSCF, SSFFIX, SSECT FREQUENCY (NHZ): CENTER= 388.2 WINTH= 29.84 INCR.= .12 SYSTEM PONTAINTH= 12 RMS ERRORS: LOSS(DE) = 9.703089E-02 PHASE(DEG) = 1737.823 FLOT SCALES: LOSS 10 DB/DIV LOSS 1 DP/DIV VS. FREQ 3.984 MHZ/DIV MOSS. LO. DENDLA FREQ 3.904 MIZZPIV PEAK: LEVEL(DB)= 29.52263 FREQ(MHZ)= 235.4863 DELAY(US)=-1.381895 SIDELDBE(DB)=-47.67892 ENERGY: LEVEL (DB) = 29.93823 CENTER (MHZ) = 399.2111 WIDTH (MHZ) = 16.12933 SKEW (MHZ) = 3.975699E-B2 HI (MHZ) CTR (MIZ) WID (MS-IZ) AV-CTR (MS-IZ) AV-WID (MS-IZ) AV-SL (DS) LOX (MS-IZ) HIX(图HZ) L(DB) LO(MHZ) -8.23 306.43533 395, 49539 326,49633 0.00338 335.48638 0.00000 0.09 395.48539 396.48638 293.35333 397.28436 323.31655 13.93137 398, 39396 14.09951 -12.51293.35393 327, 28435 0.50 399.25227 1.03 293.04807 327,46216 399,25513 14,41409 14.30%1 -13.43293.04807 327,46216 2.63 292,76877 337.72785 300.21790 15.01828 309.23779 14.74258 -15.36 292.70977 307.72705 3.00 292.59547 397.92841 392.21744 15.42194 300.21030 15.01175 -17.39 232,58647 397.92841 4.03 292,34235 388.07625 393.21838 15.73598 323,21148 15.11813 -18.39292.34235 388.67825 5.93 292.28468 308,23941 303.20703 16.03473 300.21201 15.20391 -19.60292.28468 308.20941 388,20123 388.32383 15.27493 -58.65 292,07947 6.93 292,67947 15,24353 388, 21231 339, 32368 388,69488 10.03 291.78297 333.19849 16.99123 399.21219 15.42571 -25.69 291.78297 300.69422 291.88459 339,28889 23.83 333.13574 15.23428 300.21136 15.46428 -36.67 291.63459 309,28398 30.00 290.62744 309.65979 19.93235 399.21133 15.48827 -48.35 290,62744 392,14362 393.65979

399,21183

19.81277

15.46865

-52.78 299.20166

312.01443

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BAND (IME) E54.882 Z85.888 LMIN(DD) -6,11 LMAX(DD) C.CT LDEL(EB) 2.43 PMIN(DEB) -2978.74 PMIN(DEB) 8562.88 PMIN(DEB) 5961.77

48.88 298.28156

File: 2848531A.DAT Passband Symmetry = 9.0 dB

310.01443

399.18933

PHONON CORPORATION FILE=20H2D21A.DAT 16:35:26 86-97-1997 FN 100839 824 FINAL FUNCTIONAL TEMP:H PROTOFLIGHT /N DUAL_SXX 86-23-1997 HP8753,SSCF,SSFFIX,SSREF FREQUENCY (MHZ): CENTER= 344.2 WIDTH= 39.84 INCR.= .12 SYSTEM BANDWIDTH= 12 PLOT SCALES: LOSS 10 DE/DIV LOSS 1 DE/DIV VS. FRER 3.984 KMZ/DIV LOSS TO DEZDIV FREQ 3.964 MIZ/DIU PEAK: LEVEL(DB)= 29.33262 FREQ(NHZ)= 339.6675 DELAY(US)=-1.374589 SIDELEGE(DB)=-41.71743 出(附江) CTR (MHZ) WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ) HIX(MHZ) LO(MHZ) -9.29 339.65753 339.68753 0.02222 339.62753 8.99993 9.09 339.68753 339.68753 339.68753 358,92456 344.84525 13.62214 337.26910 9.59 337.26818 344.09631 13.65646 -11.59 359.92459 __12.92 14.13539 335.93271 1.00 335.93271 351.21298 344.07285 14.28927 343.93579 351.21298 336.60349 2.03 351.59113 343.99918 14.65359 -14.99 351.59113 335,68349 344.09729 14.98764 14.92311 336.35950 3.09 336.35959 351.81372 344.03256 -16.72351.81372 344.08661 15.45422 335.17670 344.89333 -17.68 351.98389 4.23 335.17670 351.98329 344.87939 15.88540 15,03333 335.02609 5.92 352.15979 15.23533 -19.97352.15070 336.02600 344.08835 16.12469 344.02458 -21.27 235,98882 352,28598 352,20598 5.23 335,98382 344,89698 15.37795 344.20595 15,26919 10.29 335.50571 352,66782 344.82989 15.32573 -25.84 335.50571 352,66782 344.08676 17.16211 23.66 15,43988 334.88665 353.39518 344, 69293 18.42453 344,81893 -36.65 334.89355 353,32518 33.23 334.42715 353.79999 344.11359 344.01033 15.44435 -43.62 334.42715 353,79999 19.37283 43.53 333.77649 353,99374 343.85597 344.01099 15.44467 -45.54 332,77649 353.99374 23.21735 BAID (THZ) 333,233 CKIR(IB) -3.E7 1398 (55) 5.25 LIEL (DE) 0.06 FHIN (DEG) -2938.742344.54 5883,28

File: 20MSFB1A.DAT Passtand Sympetry = 0.1 dB

Channel 13 Bandpass Filter

SAW Filter (S/N: 1331576-3, S/N: B01)

AERDJET P	ART: 13	ELECTRICAL TEST DATA ST 21576-3 PPONON FART: 1280 TITLE: DAY OF DATE (FRIAL: 221	1000 01	4	
TESTED BY	: 1/22 A	TITLE: MY MY DRIE (3/3/0	TT TIME	: 1:30 pu	1	
EGGIPHENT	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	1 1 2 1 4 1 2		_ DUE:10/			
	HP 34	78A SERIAL: 2136983127	Col	DUE: 7/9	9/97		
		REQUIREMENT TITLE		DATA		P/F	
	Q/ATP	ADDRATTIC TEMPERATURE		-5.1	r	<u>P</u>	
3.2.1.1	5.2.1	OPERATING TEMPERATURE CENTER FREQUENCY &			_ 0		
3.2.1.4	3.2.3	CENTER FREQUENCY STABILITY					
Ç. E. I. 4		LO: 312.035/312.355 MHz		312, 193	MHz	р	
		HI: 332.835/332.355 MHz		332,188		<u>p</u>	
2215	E 2 4	3 dB BANDWIDTH:		0011100	_ '	<u> </u>	
3.2.1.0	J. C. 4	LO: 7.8/8.8 MHz		7.832	MH7	p	
		HI: 7.9/8.8 MHz		7.885	- HU-	<u>p</u>	
2247	225	PASSPAND SYMMETRY		1.46-3	- '		
3.2.1.5	U.C.U	LO: /0.5 dB		0.2	<u> </u>	Þ	
		HI: /0.5 dB		6.5	- 1 2	P P	
7 2 1 7	504	PASSBAND RIFFLE			_ 02		
2.6.1.7	J. G. G	339.2-315.2 MHz: /1.8 dB		0.4	ďΒ	<u>p</u>	
		329.2-335.2 FHz: /1.0 dB		6.3	dB	P	
2210	527	INSERTION LOSS					
0.5.1.0		LO: 27.8/32.2 d9		28.2	ďВ	<u>р</u> Р	
	•	HI: 27.8/39.2 dB		27.9		P	
3219		INSERTION LOSS VARIATION			•		
Ciciai	U1C10	LO: -3.4/3.4 dB		-8.2	43	P	
		HI: -0.4/0.4 dB		-8.3		p p	
3, 2, 1, 18	5.2.9	AMPLITUDE BALANCE			-		
014111		LO,HI: /8.5 dB		2.4	₫₽	<u>P_</u>	
3, 2, 1, 11	5.2.18	CUT-OF-RAYD REJECTION			-		
		BAND	PEAK (선택) !	AIDIR (RRZ)		
		WIDE: 1-303,342-1939 MHz:	49,5		9.939		
		DUAL: 303.000-306.635,					
		317.565-326.835,					
		337.565-342.92 MHz:	48,9		<u>9,899</u>		
		FEAK: 25.8/ dB	40,6	dB		<u> </u>	
		NIDTE: /1.5 KHz			0.003 MHz	<u>F</u>	
3, 2, 1, 12	5, 2, 11	SMAPE FACTOR				_	
		10: /1.30 Unitless		1.28	_ Unitless	<u> </u>	
		MI: /1.32 Unitless		1.27	Unitless	<u>p</u>	
3, 2, 1, 14	5.2,12	VEHR (RETURN LOSS)					
		329.2-315.2,329.2-335.2 MH	Z	45.5		-	
		NUM 511: 7.5/ 63		18.3	- dB	<u> </u>	
		DURL 522: 7.5/ 68		7.8	_ c B	Ψ_	
4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS	H0 1	$ \wedge $	HII.	<u>P</u>	
		CENTER FREQUENCY: -8.1/0.1		-14-	- Miz	1	(DP)
		3 2B BANNAIDTH: -8.15/2.16		- کی	- HIZ	5	
UOUT	E 0.45	INSERTION LOSS: -8.5/8.5 d	2	4	- gB	+	
NONE	0.2.10	DATA SHEET SUMMARY (PASS/FAIL)		\mathcal{O}	(ne)		
		Wrke/FMIL/			<u>- (</u>		
PHONON CO	RECENT!	<u>J</u> ri		1	CASE: 6Y858		

PHONON CORPORATION 7 METMAN DRIVE SIMSDURY, CT 85878

CASE: 6YE58 TEL: 223-651-8211 FAX: 283-651-8518

FILE=3AC8E010.DAT 10:21:48 03-04-1997 PN 109832 825 FINAL FUNCTIONAL TEMP: C PROTOFLIGHT /N DUAL SXX 03-03-1997 HP8753, SSCF, SSFFIX, SSREF FREQUENCY (MHZ): CENTER= 312.2 WIDTH= 29 INCR.= .1 SYSTEM BANDWIDTH= 6 REFERENCES: LOSS (DB) = 28.23768 PHASE (DEG) = 5249.265 DELAY (US) = 0 SLOPE (US/MHZ) = 0 RMS ERRORS: LOSS(DP)= .1182923 FHASE(DEG)= 1647.864 FLOT SCALES: LOSS 10 DB/DIV LOSS 1 DR/DIV VS. FREQ 2.9 MHZ/DIV LOSS TO TO/DIV LOSS-1-DB/BIV-FREQ 2.9 MHZ/DIV PEAK: LEVEL (DB) = 27.97474 FREQ (MHZ) = 315.3184 DELAY (US) =-2.689581 SIDELOBE (DB) =-47.89858 ENERGY: LEVEL (DB) = 28.42208 CENTER (MHZ) = 312.2286 WIDTH (MHZ) = 8.20275 SKEW (MHZ) = -6.799255E-02 CTR (MHZ) WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ) HIX (MHZ) HI (MHZ) L(DR) LO(MHZ) 9.00000 315.31842 0.09 315.31042 0.03909 315.31042 315.31042 315.31042 315.31842 -0.26 315.76852 7.06897 312.24326 7.08859 -14.55 308.69965 315.76862 312.23413 9.53 308.69%5 7.25783 -15.57 308.56216 7.23947 312.24393 315.86163 312.21191 1.00 398.56216 315.86163 312.24258 7.53538 -18.18 308.38684 316.00430 312.19556 7.61746 308.38684 316.00430 2.00 -19.82 308, 27374 316.19617 389.27374 7.83243 312.24066 7.63387 312.18994 316.10617 3.09 312.21878 7,68146 -28.68 308.18631 316.18518 7.99887 316.18518 312.18573 388.18631 4.68 312.23834 7.71939 -21.68 308.11417 316.24915 8.13498 398.11417 316.24915 312.18164 5.60308.04724 312.23593 7.77581 -23.85 316.31055 316.31055 312.17889 8.26331 6.88 308.04724 312.17686 8.65576 312.23187 7.83758 -23.27 307.84818 316.50394 10.00 307.84818 316.50394 7.85993 -48.39 307.51965 316.88493 312, 16229 9.28528 312.22916 307.51965 316.88493 20.00 -47.47 7.86149 397.31522 316.98329 307.31522 316.98309 312.14917 3.66788 312,22879 39.00 7.86161 -51.33 307.10034 317.11783 312.10907 10.81749 312.22867 307.10834 317.11783 43.00 RAND (MHZ) 369.200 315.200 -0.24 FRIN(DB) LMAX (DB) 0.21 LDEL (DB) 0.45 -2896.73 PMIN (DEG) 2934.28 PMAX (DEG)

PDEL (DEG) 5710.93 File: BACEPBIG.DAT Passband Symmetry = 8.2 dB

PHONON CORPORATION FILE=3CC8K010.DAT 10:22:36 03-04-1997 PN_188832_825 FINAL_FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL SXX 83-83-1997 HF8753, SSCF, SSFFIX, SSREF FREQUENCY (MHZ): CENTER= 332.2 WIDTH= 29 INCR.= .1 SYSTEM BANDWIDTH= 6 REFERENCES: LOSS(DB) = 27.87648 FHASE(DEG) = -6084.089 DELAY(US) = 0 SLOPE(US/MHZ) = 0 PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FREQ 2.9 MHZ/DIV MOSS TO TRADIV. LOSS 4 - DB/PIV -FREQ 2.9 MHZ/DIV FEAK: LEVEL(DB) = 27.72747 FREQ(MHZ) = 332.9545 DELAY(US) = -2.655912 SIDELOBE(DB) = -48.31363 ENERGY: LEVEL (DB) = 28.05185 CENTER (MHZ) = 332.129 WIDTH (MHZ) = 8.243107 SKEW (MHZ) = -.0455194 WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DE) LOX (MHZ) HIX (MHZ) HI (MHZ) CTR (MHZ) LO(NIZ) F(DR) 332.95447 332,95447 332.95447 0.09999332.95447 8.99993 0.00 332,95447 332.95447 -9.15335.68970 7.09315 -14.28328.50343 335,68978 332, 09961 7,18921 332, 12277 0.59 328.50949 -15.39328,41077 335,79159 7.38074 332.12219 7.27591 328,41977 335.79150 332.10114 1.89 328.26715 335.94351 332.12222 7.55869 -17.897.67635 2.00 328.26715 335.94351 332, 10535 -19.52328.16492 336,05127 332,12286 7.67392 7.88635 3.00 328.16492 336.05127 332.10893 336.13062 7.76557 -21.43328.08557 332,12378 336.13952 332,16889 8.84504 4.88 328.68557 7.79735 -22.43 328,01987 336.20139 8.18152 332.14841 5.60 328.01987 335,20139 332,11063 -23.63 8.23822 332.12491 7.82664 327.96487 336.26309 336.26303 332.11398 6.00 327.95487 332.11603 7.89201 -29.14327,77777 336.45432 336.45432 8.67654 332,12729 327.77777 10.00 327.48941 9.27951 332.12885 7,91522 -48.76 335.75932 332.12018 20.00 327.48841 335,75992 336.95255 332.12900 7.91672 -59.77 327.27289 30.00 327.27280 336.95255 332.11267 9.67975 -54.64 327.11581 337, 11526 327.11581 337.11526 9.99945 332.12988 7.91682 40.00 332.11554 BAND (MHZ) 329.288 335.288 TWIN (DB) -0.15LHAX (DB) 0.20 LDEL (DR) 0.35 PMIN(DEG) -2773.69 PMAX (DEG) 2868.30

PDEL (DEG) 5541.98
File: 30088216.DAT Passband Symmetry = 8.2 dB

ELECTRICAL TEST DATA SHEET AEROJET PART: 1321576-3 PHAHON FART: 198825 SERIAL: 581 TESTED BY: 1321576-3 PHAHON FART: 198825 SERIAL: 581 TESTED BY: 1321576-3 PHAHON FART: 198825 SERIAL: 581 TEST: FINAL FLACTIONAL EQUIPMENT: HP 8753D SERIAL: 3418487982 CAL DATE: 18/12/97					
H5 34		CAL DUE: 7/8/97			
PARASKAPK RSQ. Q/ATP	REDUIREMENT TITLE	DATA	P/F		
3.2.1.1 5.2.1	OPERATING TEMPERATURE CENTER FREQUENCY &	<u>15.2</u> C	<u>p</u>		
3.2.1.4	CENTER FREQUENCY STOPPLLITY LO: 312.035/312.365 MHz HI: 332.035/332.365 MHz	312.295 MHz 332.126 MHz	<u>p</u>		
3.2.1.5 5.2.4	3 dB BANDWIDTH: LO: 7.8/8.0 MHz HI: 7.8/8.0 MHz	7.833 MHz 7.889 MHz	<u>b</u>		
3.2.1.6 5.2.5	PASSBAND SYMMETRY LO: /0.5 dB HI: /0.5 dB	0.3 dB	P P		
3.2.1.7 5.2.6	PASSBAND RIPPLE 389.2-315.2 MHz: /1.8 d3 329.2-335.2 MHz: /1.8 dB	9.4 dB	p p		
3.2.1.8 5.2.7		28.4 dB	<u>p</u>		
3.2.1.9 5.2.8	INSERTION LOSS VARIATION LO: -0.4/0.4 dB	8.0 dB	P P		
3.2.1.19 5.2.9	HI: -9.4/0.4 dB <u>emolitude Balowoe</u> LO,HI: /0.5 dB	<u>8.9</u> dB <u>8.2</u> dB	<u>P</u>		
3.2.1.11 5.2.12		ERK (GE) WIDTH (HHz)			
	WIDE: 1-383,342-1880 MHz: _= DUAL: 323,888-385,835, 317,595-326,835,	49.1 8,823			
	337.565-342.92 MHz:	49.2 <u>0.838</u> 48.1 dB 9.033 MHz	<u>b</u>		
3.2.1.12 5.2.11	SHAPE FACTOR LO: /1.30 Unitless HI: /1.30 Unitless	1.28 Unitless 1.27 Unitless	<u>p</u>		
3.2.1.14 5.2.12	VSUR (RETURN LOSS) 309.2-315.2,329.2-335.2 MHz DUAL S11: 7.5/ CB	10.4 dB			
4.8.2 5.2.14	DUAL S22: 7.5/ dB LIMITED FUNCTIONAL TESTS	7.8 dB	P P		
	CENTER FREQUENCY: -8.1/0.1 No 3 dB BANDWIDTH: -0.15/0.16 No INSERTION LOSS: -0.5/0.5 dB		黄郎		
NOME 5.2.15	DATA SHEET SUMMARY (PASS/FAIL)	P (R)			

PHONON CORPORATION 7 MESMAN DRIVE SIMSSURY, CT 85873 CASE: 67858 TEL: 283-651-8211 FAX: 283-651-8618

PHONON CORPORATION

FILE=3ARER010.DAT 10:31:55 03-04-1997

FN 100832 825 FINAL FUNCTIONAL TEXP:R PROTOFLIGHT /N DUAL SXX

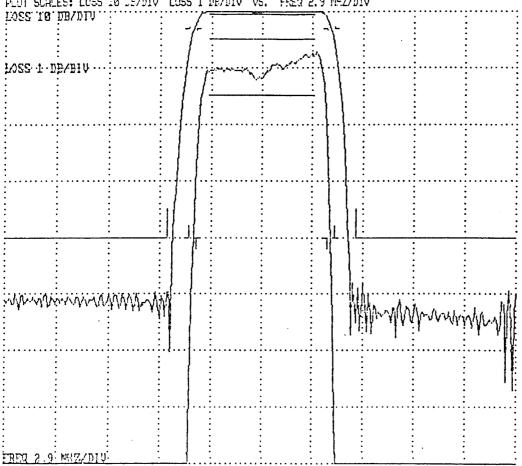
03-03-1997 HF:8753, SSCF, SSFFIX, SSREF

FREQUENCY (MHZ): CENTER= 312.2 WIDTH= 23 INCR.= .1 SYSTEM BANDWIDTH= 5

REFERENCES: LOSS(DB)= 28.48852

RMS ERRORS: LOSS(DB) = .1895405 FHASE (DEC) = 1647.72

PLOT SCALES: LOSS 10 DE/DIV LOSS 1 DE/DIV VS. FRER 2.9 MHZ/DIV



FEAK: LEVEL (DF) = 28.14101 FREQ (MHZ) = 315.3076 DELAY (US) =-2.690708 SIDELORE (DR) =-48.23971

L(DB) LO(KHZ) HI (MHZ) CTR (MHZ) WID(MHZ) AV-CTR(MHZ) AV-WID(MHZ) AV-SL(DB) LOX(MHZ) HIX (MHZ) 315.36759 -9.27315.30759 315.39759 0.00000 315.30759 0.00000 9.99315.30759 315.36759 0.58308.71329 315.78403 312,24866 7.87874 312,28937 7.00135 -14.07 308.71329 315.78403 312.22791 1.60 398.57786 315.87875 7.39179 312.24658 7,25928 -15.57388.57785 315.87875 2.00 368.40158 316.01944 312,21051 7.61785 312.28994 7.47443 -17.42388, 48158 316.01944 7.83279 338.28894 316, 12173 3.83 312,23532 312,24857 7.64188 -19.82 328.28894 315.12173 7.99955 4.63 388,28168 316.20126 312,20142 312.26913 7.59187 -20.65 398,20168 316,23126 398.13958 - 316.26529 312,19899 8,13451 5.00 312.24823 7.72152 -21.69 308.13968 316.26529 398.85332 8.26349 6.09 316.32681 312.19597 312.24753 7.77804 -23.87 308,06332 316.32681 8.65598 19.00 327.86414 316.52011 312.19214 312.24589 7.83966 -29.33 327.86414 316.52011 23.88 387.53532 316.82016 312.17822 9.28384 312,24454 7.85181 -48.63 307,53632 316.82016 32.23 397.32834 317.03269 312.16553 9,67435 312.24429 7.85328 -49.03 307.32934 317.03269 46.63 367,11392 317.13507 312, 12451 10.02115 312,24423 7.85349 -51.85 397, 11392 317.13507

PAND (MHZ) 309.200 315.200 -0.24 LMIN(DE)

LMAX (DB) 8.21 LDEL (DB) 9.45 PYIN (DEG) -2969,35 Priex (DEG) 2324.63

PDEL (DEG) 5719.37

File: 3AR8B010.DAT Passband Symmetry = 0.3 dB

PHONON CORPORATION FILE=3CR8B010.DAT 10:32:59 03-04-1997 PN 188832 625 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX 03-03-1997 HP8753, SSCF, SSFFIX, SSREF FREQUENCY (MHZ): CENTER= 332.2 WIDTH= 29 INCR.= .1 SYSTEM BANDWIDTH= 6 DELAY(US) = 0 SLOPE(US/MHZ) = 0 FLOT SCALES: LOSS 10 DB/DIV LOSS 1 DP/DIV VS. FREQ 2.9 MHZ/DIV LOSS TO DEVDIV LOSS-4-DB/EIV-

FIREQ 2.9 MHZZDIV FEAK: LEVEL (DB) = 28, 82748 FRER (MHZ) = 333,8759 DELAY (US) =-2,656775 SIDELOBE (DB) =-48,4758 HI (HHZ) CTR (MHZ) WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DE) LOX (MHZ) HIX(MHZ) L(DF) LO(KHZ) 333.07593 333.07593 333.07593 9,02909 333.07593 0.99933 9.03 333,67593 333.07593 -0.18 7.16122 7.18376 -14.82 328.54291 335.70413 335.70413 332,12354 332.17590 0.59328.54291 7.34999 -15.91 328.43145 335.88962 332.17261 335.80862 332.12985 7.37717 1.00 328, 43146 335,95776 -17.92 328.29114 335.95776 332,12445 7.65563 332, 13541 7.55635 328, 29114 2.63 7.67884 -19.55 328.18627 335.06522 328.18597 335.06622 332.12616 7.88816 332.13921 3.00 336.14493 332,12555 8.03879 332,16254 7.71670 -28.45 328.10614 335.14493 4.63 328.10514 335,21619 8.17694 332,15948 7.78928 -22.52 328.03325 335,21619 328.83925 332,12772 5.83 327.98288 335, 27792 332,13848 8.29584 332.14565 7.81641 -23.64 327.98288 336,27792 €.03 327.79626 336.46915 332.13269 8.67288 332.15985 7.88145 -29.14 327.79626 336,46915 18.83 7.98467 -49.77 327.49382 20.09 327, 49982 335,77347 332.13666 9,27365 332.15388 335.77347 7,99618 -51.03 32.00 327.29431 336.96579 332.13997 9.67148 332.15338 327.29431 335.96579 9.97839 -55.38 327, 14235 40.00 327.14236 337.12076 332, 13156 332.15344 7.96528 337.12276 BAND (MHZ) 329.200 335.200 LMIN(DB) -0.189.13 LMAX (DE) LDEL (DF) 8.35 PRIN(DEC) -2773.16

FTAX (DEG)

PDEL (DEG)

2857.95

5541.11

File: 3CR8R010.DAT Passband Symmetry = 0.3 dB

FILE=3ER8P010.DAT 10:33:42 03-04-1997 FM_100832_825 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N WIDE S21 03-03-1997 HF:9753, SSKEF, SSKEF WIDTH= 999 INCR.= .203125 SYSTEM BANDWIDTH= 999 FREQUENCY (MHZ): CENTER= 500.5 REFERENCES: LOSS (DB) = 28.38824 PHASE (DEG) = -5061.067 DELAY (US) = 4.745625 SLOPE (US/MHZ) = 8 EMS ERRORS: LOSS(DB)= 8.157185 PHASE(DEG)= 6952.302 PLOT SCALES: LOSS 10 DB/DIV VS. FREQ 99.9 MHZ/DIV MIGNED BY SECT FREQ 99,9 502/014 PEAK; LEVEL(DB) = 28.05311 FREQ(MHZ) = 332.9554 DELAY(US) = 6.034695 SIDELORE(DB) = 40.34793 ENERGY: LEVEL (DB) = 28.48795 CENTER (MHZ) = 322.6288 WIDTH (MHZ) = 16.45874 SKEW (MHZ) = 237.688 WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ) HIX (MHZ) L(DB) LO(HHZ) HI (KHZ) CTR (MHZ) 6.66653 335.95535 6.63 332, 95535 332,95535 332.95535 8.69993 -0.26 332.95535 332.95535 332,15498 7.42785 -20.75 388.76236 335.72726 335.72726 332.12042 7,21368 8.59 328.51358 332.15488 7.42785 -28.74 398.59570 335,83167 1.09 328,41162 335, 83167 332, 12164 7.42934 335.97397 332,12338 7.72117 332,15265 7,74171 -28.91 368,41461 335,97397 2.03 328.27289 -28.91 388,29384 335.27548 3.89 328.17419 336.87648 332, 12534 7.93228 332.15265 7.74171 7.94852 332.15155 -21.82 303.20381 335.15628 4.63 328.09808 335.15628 332.12728 8,358**3**9 7.94852 368.13379 336, 22443 335.22443 332,12875 8.19135 332.15155 -21,62 5.60328.83398 332.12989 8.32762 332.15155 7.94852 -21.02 398.05559 336.28359 335.28369 5.00 327.97697 8.68173 332.15192 8.04927 -21.07 397.87784 336.47399 332.13223 327.79135 336.47398 10.00 336.77332 9,27649 332,15283 8.09116 -21.10 307.54404 335.77332 332.13527 29.93 327.49683 332.13098 9.56918 332.15283 8.03201 -21.83 387.33938 336.96552 327.29642 336.96552 33.09 327.14459 337.12256 332.13354 9.97596 332.15283 8.03203 -21.03 397, 12433 337.12256 40.69 1.009 383.008 342.008 1000.009 PAND (MHZ) LMIN(DE) 50.67 -8.26 49.23 77.92 70.26 LMAX (DE) 88.24 LDEL (DP) 27.85 70.52 49.15 FHIN (DEG) -9999.03 -9999.83 -9999.03 PMAX (DEG) -5178,76 3343.89 8635.98 4828.24 13842.89 18534.95 PDEL (DEG)

FILE: 3ER83010.DAT Out-of-band Rejection: PEAK= 48.1 dB WIDTH= 8.020 MHz

PHONON CORPORATION

1.

FILE=3FR8EG10.DAT 19:34:04 03-04-1997 PN 188832 825 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX 03-03-1997 HP8753, SSREF, SSREF WIDTH= 68 INCR.= .1 SYSTEM BANDWIDTH= 68 FREQUENCY (FHZ): CENTER= 322.2 RMS ERRORS: LOSS(DE) = 24.92244 PHASE(DEG) = 2583.591 PLOT SCALES: LOSS 10 PP/DIV VS. FREQ 6 MHZ/DIV LOSS TO PEADLY FREQ 6 MHZ/DIV PEAK: LEVEL(DE) = 28.02748 FREQ(MHZ) = 333.0759 DELAY(US) = .4821586 SIDELOBE(DE) = -46.92973 ENERGY: LEVEL (DR) = 28.48511 CENTER (MHZ) = 322.4559 WIDTH (MHZ) = 16.43883 SKEW (MHZ) = -.4882296 WID(MHZ) AV-CTR(MHZ) AV-WID(MHZ) AV-SL(DE) LOX(MHZ) L(DB) LO(MHZ) HI (MHZ) CTR (MHZ) HIX (MHZ) 333,67593 -0.28333.67593 333.97593 333, 67593 8.83338 333.87593 0.03833 6.69 333,67593 335.72531 7.20938 332,17598 7.35175 -7.98 2.59 328.51593 332, 12061 338.75668 335.72531 1.68 328, 41394 335,82767 332,12379 7.41373 332,17261 7.52167 -8.65 368.59653 335,82767 335.97012 332.12451 7.69122 332.13541 7.73715 308,41589 2.03 328.27890 -8.14 335.97012 3.68 328.17864 335.87538 332.12671 7.89734 332,13961 7.85322 -8.19 323, 22770 335, 87538 4.00 328.09836 336.15225 332.12531 8.05389 332.14205 7.93718 -8.22 388.21835 336.15225 328.03308 336.22272 332.12790 8.18954 332, 15948 398.13779 5.33 7.97143 -8.23 336.22272 399.66973 335, 28372 327.97772 336.28372 332.13074 8.36699 332.14525 7.99920 6.00 -8.24 335.47311 332.13275 327,79236 8,68976 332.15665 8.83575 307.85887 335.47311 10.89 -8.24 327,49731 336,77591 332,13668 9,27859 332,15388 22.03 8.08352 -8.20 307.53862 336.77591 32,00 327, 29291 335,96741 332,13816 9.67458 332.15338 8.63167 -8.17 327.33838 335.96741 327.14944 337.12234 332.13141 48.93 9.98190 332.15341 8.89117 -6.14 367.11493 337,12234 389.268 315.289 329.289 335.268 BAHD (MHZ) -8.19 LMIN(DB) -0.14 -0.28LMAX (DB) 67.83 0.31 8.09 67.22 LDGT (DB) 0.45 0.35 PHILI(DEG) -2119.61 -2969.11 -1646.83 342.34 1844.29 2451.95 4833.37 PMAX (DEG) 745.35 PDFL (DEG) 2392.68 FILE: 3FR8B818.DAT Out-of-band Rejection: PEAK= 48.2 dB WIDTH= 0.090 MHz

PHONON CORPORATION
FILE: 3FR8B018.DAT (+SSCF)
PM_108832_825 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N DL
83-03-1997 HP8753,SSREF,SSREF,SSCF
REFERENCES: LOSS(DE)= 28.39824 PHASE(DEG)= 288.2329
DELAY(US)= 1.529393 SLOPE(US/MHZ)= 0

BANDPASS CHARACTERISTICS MEASUREMENT

LOSS (DB)	PHASE (DEG)
51.04	165.89
54.00	1121.39
5.23	837.65
Ø.12	99.45
0.22	-634.73
9. 12	-1367.64
-0.12	-2162.79
24.76	-2849.97
52.19	-2209.31
53.95	-1224.19
54.47	-283.23
53.89	695.72
57.22	1663.87
20.70	1451.61
-0.05	739.13
-9.6 5	16.28
-0.21	-695.51
-0.28	-1410.93
5.94°	-2123.73
55.39	-2796.88
69.93	-2510.22
	51.04 54.00 5.23 0.12 0.22 0.12 -0.12 24.76 52.19 53.05 54.47 53.69 57.22 20.70 -0.65 -0.65 -0.21 -0.20 5.39



ध्यक्षां ह)85 7 ; 13	ELECTRICAL TEST DATA S 21576-3 PHYNON PORT: 1908	25 . SERTAL: 321	
TEGT: ETG	12 113	TITLE: PA MA DATE	33121 : 11:3031	
EQUIPYENT	[: HP 87		CAL DUE: 18/12/97 CAL DUE: 7/8/97	
PARAGR REQ.	APH OZOTO	REQUIREMENT TITLE	DATA	F/F
3.2.1.1	5.2.1	OPERATING TEMPERATURE	<u>35.5</u> C	p
3.2.1.3	5.2.3	CENTER FREQUENCY &		<u> </u>
3.2.1.4		CENTER FREQUENCY STABILITY LD: 312.035/312.365 MHz HI: 332.035/232.365 MHz	312.212 MHz 332.132 MHz	<u>p</u>
3.2.1.5	5.2.4	3 dB BANDWIDTH: LC: 7.8/8.8 MHz		p
3016	E 2 E	HI: 7.6/9.0 MHz	7.875 FHz	<u>P</u>
2.2.1.5	5.4.5	PASSBAND SYMETRY LO: /2.5 dB	2.3 dB	Þ
		HI: /C.5 dB	<u>9.3</u> dB <u>9.3</u> dB	P P
3.2.1.7	5.2.6	PASSBAND RIPPLE 309.2-315.2 MHz: /1.0 dB	2.4 dB	ם
		329.2-335.2 MMz: /1.0 dB	<u>P.4</u> dB P.3 dB	<u>b</u>
3.2.1.8	5.2.7	INSERTION LOSS		
		LO: 27.8/38.2 dB	28.5 dB	<u>p</u>
7 2 1 9	5,24	HI: 27.8/30.2 CB INSERTION LOSS VARIATION	28.6 dB	<u> </u>
G16,113	JiLiu	LO: -8.4/8.4 dB	8.2 (3	<u>P</u>
		HI: -9.4/2.4 dB	<u>e.4</u> db	P
3.2.1.10	5.2.9	AMPLITUDE BALANCE	6. <u></u> 69	p
2.2.1.11	5, 2, 19	LO,HI: /0.5 dB OUT-OF-BAND REJECTION	0.0 03	<u>:</u>
0121112		PAND	PEAK (db) WIDTH (MHz)	
		DUAL: 303.009-305.835,	39.7 6.858	
		317.565-326.835, 337.565-342.00 KHz:	49.1 8.023	
		PEAK: 35.0/ dB	39.7 dB	<u><u><u>r</u>1</u></u>
3 6 4 45	- 0.44	WEDTH: /1.5 MHz	<u> </u>	<u><u><u> </u></u></u>
3.2.1.12		SHAPE FACTOR LO: /1.30 Unitless	1.29 Unitless	ŭ
		HI: /1.30 Unitless	1.25 Utitless	<u> </u>
3, 2, 1, 14	5.2.12	VENR (RETURN LOSS)		
		309.2-315.2,329.2-335.2 MM DUAL S11: 7.5/ dB	z 10.5 dB	D
		DUAL 522: 7.5/ dB	7.8 dB	<u>p</u>
4.0.2	5.2.14	LIMITED FUNCTIONAL TESTS		
		CENTER FREQUENCY: -8.1/8.1		
		3 de senewidth: -0.16/0.16 INSERTION LOSS: -0.5/0.5 d		TO THE
HONE	5,2,15	DATA SHEET SUMMARY		
		(PASS/FAIL)	P (pp)	

PHONON CORPORATION 7 HERCAN DRIVE SIMSPURY, CT 05070

CASE: 67858 TEL: 203-651-8211 FAX: 203-651-8818

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PHONON CORPORATION
FILE=3AH8B019.DAT 10:42:08 03-04-1997
PM 188832 825 FINAL FUNCTIONAL TEMPHH PROTOFLIGHT AN DURL SXX
63-63-1997 HP6753, SSCF, SSFFIX, SSFEF
                                                    SYSTEM BANDUIDTA= 6
FFEQUENCY (MHZ): CENTER= 312.2
                               WINTH= 29 INCR.= .1
REFERENCES: LOSS(DB) = 28.56753
                               PHASE (DEG) = 5545.066
                                                      DELAY(US) = 8 SLOPE(US/EHZ) = 0
EMS ERRORS: LOSS(DB)= .1110082 PMASE(DE0)= 1647.628
PLOT SCPLES: LOSS 18 DB/DIV LOSS 1 DP/DIV VS. FRER 2.9 MHZ/DIV
MINER DE SECT
FOSS-T-DB/BIA --
                            1
FORD 2.9 MMZZDIU-
PEAK: LEVEL (DP) = 28.30039 FREG(MHZ) = 315.7105 DELAY(US) = -2.59125 SIMELOPE(DP) = -48.38384
WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ)
 L(DB)
         LO(MHZ)
                     HI (MHZ)
                                CTR (MHZ)
                                                                                                   HIX(HHZ)
                                                                                9.98
                                                       315, 31055
 -0.27
        315,31055
                    315.31055
                                315.31055
                                             8,09993
                                                                    6.68833
                                                                                       315.31055
                                                                                                   315.31055
                                                                    7.00261
  0.59
        383,71997
                    215.78833
                                312, 25415
                                             7,66833
                                                       312, 23123
                                                                              -14.23
                                                                                       368.71997
                                                                                                   215, 78939
                                                       312,24918
                                                                    7.25984
                                                                              -15.57
  1.29
        338,58396
                    315.89005
                                312, 23594
                                             7.30618
                                                                                       388.58386
                                                                                                   315,89995
                                                                              -17.43
  2.69
        368, 46965
                    316,02665
                                312,21756
                                             7,51768
                                                       312,28473
                                                                    7.47527
                                                                                       368,48365
                                                                                                   316.02606
        308.29529
                    316.12820
                                312,21173
                                             7,83292
                                                       312.25351
                                                                    7.64234
                                                                              -19.82
                                                                                       308.29529
                                                                                                   315.12520
  3,03
                                                                              -23.67
                                312,28868
                                             7,99734
                                                       312, 27451
                                                                    7.65381
                                                                                       388,21822
  4.08
        388,21882
                    315.20737
                                                                                                   316, 20737
  5.99
        398.13785
                    316.27234
                                312,28588
                                             8,13449
                                                       312,25485
                                                                    7.72259
                                                                              -21.53
                                                                                       309.13765
                                                                                                   316.27234
 5.23
        369,67628
                    316, 33355
                                312,20197
                                             8.25337
                                                       312,25485
                                                                    7.77917
                                                                              -23.88
                                                                                       398,87928
                                                                                                   315, 33355
        327,87119
                                312,19894
                                             8.65552
                                                       312,25345
                                                                    7.94259
                                                                              -29.34
                                                                                       387.87119
                                                                                                   315,52678
 12.98
                    316,52678
                                             9, 28287
 20.03
        327.54382
                    316,82669
                                312.18524
                                                       312,25369
                                                                    7.55273
                                                                              -40.59
                                                                                       367.54352
                                                                                                   315,82559
                                                       312,25259
                                                                    7.85424
 30.99
        397.33331
                    317,98995
                                312, 17120
                                             9,67575
                                                                              -49.86
                                                                                       397.33331
                                                                                                   317,00936
 49.09
        397, 12199
                    317, 14358
                                312, 13239
                                            10,62258
                                                       312.25247
                                                                    7.85436
                                                                              -51.83
                                                                                       307, 12109
                                                                                                   317, 14368
           309,202
EAND (MHZ)
                   315,299
FRIH (DB)
                 -8.24
FASX (DB)
                  8.21
LTEL (IB)
                  8.45
PMIN (DEG)
              -2395.16
PHISX (DEG)
               2983.93
(ניבס)
               5710.03
File: 30HEB212.DAT
                     Passband Symmetry = 2.3 dB
```

FILE=3CH8B318.DAT 10:42:57 03-04-1997 PN 103032 825 FINAL FUNCTIONAL TEMPTH PROTOFLIGHT AT DUAL SXX 03-03-1997 HP8753, SSCF, SSFFIX, SSECF FRETXENCY(MHZ): CENTER= 332.2 WIDTH= 29 INCR.= .1 SYSTEM BANDAIDTH= S REFERENCES: LOSS(DB)= 28.56627 FHASE(DES)=-5248.615 DELAY(US)= 0 SLOPE(US/MHZ)= 0 PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED 2.9 MHZ/DIV LOSS TO PRICTY LOSS-1-DB/BIV--ini मार्गराय वे वे मण्यारा PEAK: LEVEL (DE) = 28.38867 | FRED (MD/Z) = 333.877 | DELAY (US) =-2.585858 | SIDELOBE (DE) =-48.29525 HI (MHZ) CTR (MHZ) WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ) L(DE) LC (KHZ) HIX(MHZ) 333.97703 333.07703 333.07703 0.00052 333.07703 0.00000 6.68 -9.19333.07793 233,07703 332,17517 332,17255 -14.85 328,55914 335,70418 332,13162 7,14495 7, 17919 328.55914 335.76410 9.50-15.96 7.36667 235, 81155 332, 12714 7.34435 328,44269 1.00 328.44269 335.81155 332,16986 7.66294 7.48932 -17.23 2.83 328, 39157 335.96442 332,13320 328.30157 235, 96442 7.66249 -19.59 328.19492 336.07001 332, 13245 7.8759 332.14111 328, 19432 336.07021 3.89 335,14835 232,13932 8.83218 332.16489 7.76881 -22.52 328.11627 335,14838 328, 11527 4.00 335.21964 322,12269 8.17151 332.15263 7.78064 -22.59 328.84813 336, 21954 5.69 328.84813 336.28128 332.14868 7.83581 -23.69 327,99294 5.00 327,99294 332,13611 8.29634 335,28128 7.95151 -27.75 327.80453 332, 13855 332.16933 .0.03 327, 89453 336.47259 8.66886 335,47258 -38.95 327.51821 9,26529 332,15866 7,89328 28,88 327.51031 335,77548 332,14319 335,77640 33.09 327.30713 9.65796 332.15854 7.69557 -49.31 327.36713 335.95589 336.96599 332.13511 9.93365 332.15854 7.89575 -55.68 327.18024 337.11389 49.68 327.15624 337.11389 332.14706 BAND (MHZ) 329.239 335.209 -3.17 LMIN(DB) LMAX (DE) P. 13 LDEL (IE) 8.35 PMIN (DEG) -2773.12 PHAX (DEG) 2857,54 5540.65 PDEL (DEG)

PHONON CORPORATION

File: 30HEPRIE.DAT Passband Symmetry = 8.3 dB

Channel 14 Bandpass Filter

SAW Filter (S/N: 1331576-4, S/N: B02)

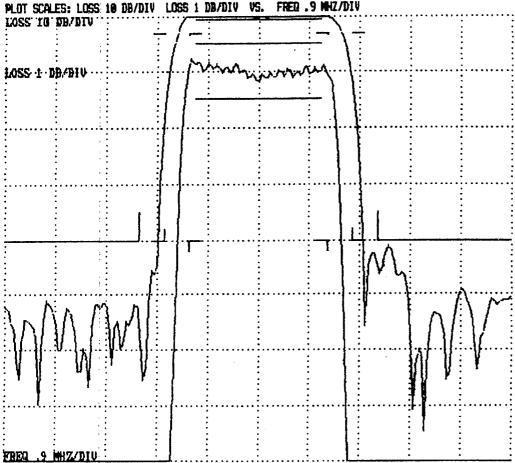
ELECTRICAL TEST DATA SHEET AERDJET PARI: 1331576-4 PHONON PART: 188626 SERIAL: 1882 TESTED BY: PORCAL TITLE: MAR DATE: 6/24/9) TIME: 10:00 Av					
1EST: FIRST FUNCTIONSE					
EQUIPMENT		3D SERIAL:3416A67982 (AL DUE: 18		
	HP 347	8A SERIAL: 2136A83127 (TAL DUE: 7/	8/97	
PARAGRI REQ.		REQUIREMENT TITLE	DATA		P/F
7 2 1 I	5.2.1	OPERATING TEMPERATURE	-4.7	C	<u>p</u>
3.2.1.3	5.2.3	CENTER FREQUENCY &		_	
3.2.1.4	5.5	CENTER FREQUENCY STABILITY			_
!		LD: 317.535/317.865 Niz	317.716		<u>P</u>
i		HI: 326.535/326.865 MHz	326.755	MHz	<u>p</u>
3.2.1.5	5.2.4	3 dB BANDWIDTH:			
:		LO: 2.8/3.0 MHz	2.918	MHz	P
		HI: 2.8/3.0 HHz	2.95	_ THZ	<u> </u>
3.2.1.6	5.2.5	PASSBAND SYMPETRY		15	
:		LD: /8.5 dB	8.6	_ q <u>₽</u>	<u>р</u>
		HI: /0.5 dB	9.8	_ dB	<u> </u>
3.2.1.7	5.2.6	PASSBAND RIPPLE		_	•
i		316.575-318.825 MHz: /1.8 dB	9.3		P
		325.575-327.825 MHz: /1.9 dB	6.5	_ qg	<u> </u>
3.2.1.8	5.2.7	INSERTION LOSS			
i		LO: 27.8/39.2 dB	29.8		P
		HI: 27.8/30.2 dB	28.7	_ dB	<u> </u>
3.2.1.9	5.2.8	INSERTION LOSS VARIATION			F.
1		LO: -8.4/0.4 dB	-6.1	_ q <u>B</u>	<u>p</u>
:		HI: -0.4/0.4 dB	-0.1	_ q <u>B</u>	<u> </u>
3.2.1.10	5.2.9	AMPLITUDE BALANCE			_
:		LO,HI: /0.5 dB	<u>0.3</u>	_ dB	p
3.2.1.11	5.2.10	OUT-OF-BOND REJECTION			
:			K(dB)	WIDTH(MHz)	
:		WIDE: 1-313,331-1988 Miz: 46	.1	8.000	
:		DUAL: 313.800-315.585,			
		319.815-324.585,		0.000	
!			<u>.2</u>	9.999	n
:			.2 dB	0 000 MJ-	P
		WIDTH: /0.6 MHz		0.999 Miz	<u> </u>
3.2.1,12	5.2.11	SHAPE FACTOR	1.00	Unitless	Q
!		LO: /1.30 Unitless	1.25 1.24	- Unitless	-
:		HI: /1.38 Unitless	1.57	- AUTOTASS	<u>-</u>
3.2.1,14	5.2.12	VSWR (RETURN LOSS)	S MU-		
i		316.575-318.825,325.575-327.82	9.8	ď₿	P
:		DUAL 511: 7.5/ dB	8.4	dB	Ė
4 6 5	E 2 44	DUAL S22: 7.5/ dB LINITED FUNCTIONAL TESTS	017_	_ **	<u> </u>
4.8.2	3.6.14	CENTER FREEDENCY: -0.1/0.1 NHz	0	Miz	P
!		3 de Bandrieth: -0.06/8.06 Mi	Ö	- NHz	المطم امام
:		INSERTION LOSS: -8.5/8.5 dB	. -0 -	_ <u>6</u> 8	P
NONE	5 2 15	BATA SHEET SUMMRY			
1241	A.C. 19	(PASS/FAIL)	P	(DY)	
		TRANSPILL			
PHONON CORPORATION CAGE: 6Y858					
7 HERMAN DRIVE				TEL: 283-651	
				FAX: 283-651	-8618
California At Cools					

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PHONON CORPORATION

FILE=4AC8882A. DAT: 14:03:52 05-28-1998
PN 100834 826 FINAL FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL_SXX
06-23-1997 HP8753, SSCF, SSFFIX, SSREF
FREQUENCY (MHZ): CENTER= 317.7 WIDTH= 9 INCR.= .05 SYSTEM BONDMIDTH= 2.25
```

REFERENCES: LOSS(DB) = 28.97637 PHASE (BEB) = 4437.35 DELAY(US) = 8 SLOPE(US/MHZ) = 8

RMS ERRORS: LOSS(DB) = 8.392516E-82 PMSE(DE6) = 743.5385
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED .9 NHZ/DIV



PEAK: LEVEL(DB) = 28.73477 FRED OWNZ) = 316.5109 DELAY(US) =-3.073554 SIDELABE(DB) =-41.29675 ENERGY: LEVEL (DB) = 29.14792 CENTER (NHZ) = 317.7896 HIDTH(NHZ) = 3.853399 SKEH (NHZ) = 1.324691E-82 HID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DM) L(DB) LD(MHZ): HI (HHZ) CTR(NHZ) LOX (MHZ) HIX (MHZ) 8.00000 316, 51089 8.00000 **8.80** 316.51089 316.51009 -8.24 316.51089 316.51989 316, 51889 319, 03329 317, 76587 2,65488 317.69366 2,64985 -13.51316.37842 319. 03329 0.50 316, 37842 317.69458 315.33725 319.07703 317.70715 2.73978 2,73435 -14.97 319.07703 1.00 316.33725 2.00 316, 29114 319.13751 317.71432 2.84637 317, 69632 2.88452 -16.77 316, 29114 319. 13751 2.91866 2.83413 -17.833.00 316.25674 319, 17480 317.71576 317.71149 316, 25674 319, 17480 -28.36 4.00 316, 22748 319.29767 317.71759 2.98919 317.71027 2.87923 316.22748 319.20767 -28, 32 5.00 316, 20322 319.23438 317.71881 3.03116 317.71627 2.87923 316.20322 319.23438 -23.45 316, 18248 6.00 316.18240 319.25778 317.72009 3.07538 317.70953 2.98812 319.25778 19.00 316, 11746 319, 33990 317,72418 3.21344 317.79932 2.92409 -27.23 316, 11746 319.33090 20.00 316.01315 319, 44400 317,72658 3, 43885 317.70944 2,93419 -37.74 316.01315 319.44400 30.00 315.94980 319, 51120 317.73650 3.56148 317.70953 2,93588 -49.85 315, 94980 319.51120 40.00 315.91479 319, 55298 317, 73389 3.63818 317.79953 2, 93508 -58.38 315.91479 319, 55298

BAND (NHZ) 316.575 318.825

LMIN(DB) -9.17 LMAX(DB) 9.17 LDEL(DB) 9.34 PMIN(DEG) -1262.34 PMAX(DEG) 1255.89 PDEL(DEG) 2518.22

File: 4AC8B82A.DAT Passband Symmetry = 6.0 dB

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PHONON CORPORATION
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FILE=4CC8B82A. DAT 14:03:56 05-28-1998

PN 188834 826 FINAL FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL_SXX

06-23-1997 HP8753, SSCF, SSFFIX, SSREF

SYSTEM BANDWIDTH 2.25 WIDTH= 9 REQUENCY (NHZ): CENTER= 326.7 INCR. = .05 PHASE (DEG) =-2932. 698 BELAY (US) = 8 SLOPE (US/MHZ) = 0 FERENCES: LOSS (DB) = 28,65714

PHRSE (DEG) = 742.2654

MS ERRORS: LOSS(DB)= .1462517 PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED .9 NHZ/DIV FORE LG. DB/DLA LOSS + DB/BIV FREQ 9 WHZ/BIU

PEAK: LEVEL(DB) = 28,2807 FRER(NHZ) = 325.5515 DELAY(US) =-3.164168 SIBELBBE(BB) =-48.88281 ENERGY: LEVEL (DB) = 28,77118 CENTER (NHZ) = 326,7459 WIDTH (NHZ) = 3,875341 SKEW (NHZ) = 1,869928E-82 WID (MHZ) AV-CTR (MHZ) AV-HID (MHZ) AV-SL (DB) LDX (MHZ) HIX (MHZ) L(DB) LD (MIZ) HI (NHZ) CTR(MHZ) 325.55145 325, 55145 8.99 -0.38 325, 55145 325, 55145 325,55145 0.99999 325.55145 0.00000 -14.45 325, 38898 328, 12500 325, 38888 328, 12500 326, 75658 2,73700 326,74164 2.76899 0.50 326.76199 2.89968 -15.26 325.35657 32B, 15524 325, 35657 328.15524 326.75592 2.79868 1.00 325.31149 328, 19983 325, 31149 328, 19983 326, 75568 2.88834 326.74286 2.84819 -16.21 2.00 325, 27725 326.74488 -18.48325.27725 328.23254 3.00 328, 23254 326.75488 2.95529 2.90986 325.24911 -21.29 325.24911 328, 25925 328, 25925 326.75418 3.01013 325.74496 2.95878 4.00 325, 22513 -21.26 325, 22513 328, 28235 328, 28235 326.75372 3, 85722 326,74496 2,95978 5.00 -22.71 325, 28487 328, 38264 325, 20497 328, 38264 326.75336 3.09857 326.75177 2.96374 6.00 325, 13800 328.36697 326, 75258 3.22897 326,74582 2,98836 -29, 03 325, 13800 328, 36697 10.00 20.00 325.03185 328, 46741 326.74963 3.43555 326.74594 2,99520 -41.12 325.03186 328, 46741 326.74591 2.99555 -47.97 324.96353 328, 52066 30.00 324.96353 328.52866 326.74210 3.55713

326, 74591

3,64981

324.9174B 327.825 325, 575 BAND (MHZ)

LMIN(DB) -0.39 0.21 LMAX (DB)

48.00

0.51 LDEL (DB) PMIN (DES) -1256.34

1258.34 PMAX (DE6) 2514.69 PDEL (DEG)

File: 4CC8B02A.DAT Passband Symmetry = 0.0 dB

328.56729

326.74237

2.99559

-58.32

324.91748

328, 68329

1		FLECTRICAL TEST DATA SHE 31576-4 PHOHON PART: 188826 A TITLE: ALC P DATE: () TIONAL 530 SEPTOL-3418087982	ET		
AEROJET F	YART: 13	31,576-4 PHOHON PART: 109826	SERIAL:	92	
TESTED BY	r: <u>Po e</u> c	A TITLE: MAR DATE:	124197 II	12: 00:00 m	?
TEST: FI	YAL FUNC	TIONAL			
EQUIPMENT		JUB SENTINE SUTTONOS JOE		7.4	
:	HP 34	78A SERIAL: 2136A03127	_ Cal Due: 7	<u>/8/97</u>	
:					
Parage	raph	REQUIREMENT TITLE	DATA		P/F
REQ.	Q/ATP				_
		OPERATING TEMPERATURE	15.0	C	p
3.2.1.3	5.2.3	CENTER FREGUENCY &			
3.2.1.4		CENTER FREQUENCY STABILITY			
i		LO: 317.535/317.865 MHz	317.75	5 MHz	PP
:		HI: 326.535/326.865 MHz	326.7	7 MHz	<u> P</u>
3.2.1.5	5,2,4	3 db Bandwidth:			
		LO: 2.8/3.8 NHz	2.91	9 191z	PP
		HI: 2.8/3.0 MHz	2.35	9 MHz 5 MHz	P
3216	525	PASSBAND SYMMETRY		- · · · ·	
3.6.750	J. L. J	LO: /8.5 dB	8.8	dB	Đ
:		HI: /0.5 dB	0.1	dB	PP
2217	E 2 (PASSBAND RIPPLE		_ ~	
J. C. I.	J. C. 6	316.575-318.825 MHz: /1.0 dB	0.7	4g	P P
				_ B _ B	- <u></u>
3044		325.575-327.825 MHz: /1.0 dB	8.3	WD	<u>-</u> -
3.2.1.8	5.2.7	INSERTION LOSS	00.4	JT.	n
		LO: 27.8/38.2 dB	23.1	dB	p p
		HI: 27.8/38.2 dB	28.8	dB	<u>p</u>
3.2.1.9	5.2.8	INSERTION LOSS VARIATION			_
:		LO: -8.4/8.4 dB	9.6		<u>p</u>
		HI: -8.4/8.4 dB	8.8	qB	P P
3.2.1.10	5.2.9	AMPLITUDE BALANCE		•	
;		LO,HI: /B.5 dB	6.3	dB	P
3.2.1.11	5.2.10	OUT-OF-BAND REJECTION			
		BAND P	EAK (dB)	uidin(Miz)	
:		WIDE: 1-313,331-1990 MHz:	4. 2	6.888	
		DUAL: 313.090-315.585,			
		319.815-324.585,			
i			41.4	6.99 8	
			41.4 dB		P
;		WIDTH: /8.6 NHz		0.008 Miz	P
3.2.1.12	5.2.11	SHAPE FACTOR			
U+ L+ L+ LL	016114	LO: /1.38 Unitless	1.24	Unitless	P
į		HI: /1.38 Unitless	1,23		P
7 2 1: 14	5 2 12	VSHR (RETURN LOSS)			
Gr Cr Yb T.d.	J.E.IE	316.575-318.825,325.575-327.0	995 MU-		
			9.4	₫₿	D
		DUAL S11: 7.5/ dB		— dB	alala lala
		DUAL 522: 7.5/ dB	8.5	gp	<u> </u>
4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS	1- 10 And		9
		CENTER FREQUENCY: -8.1/8.1 W			产
		3 db Bandwidth: -0.06/0.06 14		_ MHz	K
eme i		INSERTION LOSS: -0.5/0.5 dB	+0.1		上
NONE	5.2.15	DATA SHEET SUMMARY	Ð	Ro)	
:		(PASS/FAIL)			
reposit se	000015::-			DADE - 21/050	
PHONON CO		RY		CAGE: 6Y858	2544
7 HERMAN		_		TEL: 283-651	
SIMSBURY,	CT 0687	9		FAX: 283-651	-8618

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14:04
PHONON CORPORATION
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FILE=4AR8B02A.DAT 14:04:09 05-28-1998

PN 100834 826 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX

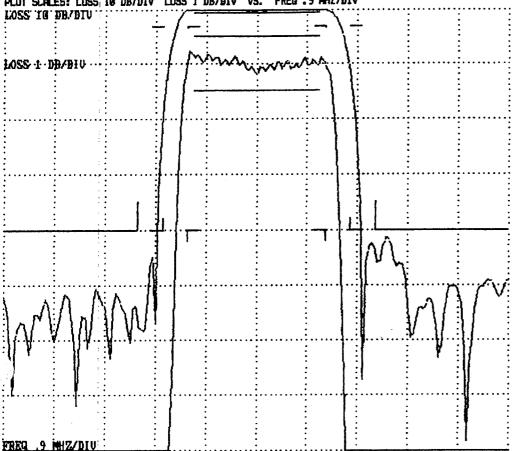
%-23-1997 HP8753| SSCF, SSFFIX, SSREF

DEQUENCY (NHZ): CENTER= 317.7 WIDTH= 9 INCR.= .05 SYSTEM BRADWIDTH= 2.25

REFERENCES: LOSS(DB) = 29.87385 PHASE (BEG) = 3781.215 BELAY(US) = 0 SLOPE(US/NHZ) = 8

RMS ERRORS: LOSS(DB) = 8.576339E-02 PHASE(DEB) = 743.5031

PLOT SCALES: LOSS, 10 DB/DIV LOSS 1 DB/DIV VS. FRED .9 MHZ/DIV



PEAK; LEVEL (DB) = 28.83842 FRED (MHZ) = 316.5176 DELAY (US) =-3.869631 SIDELONE (DB) =-41.67381

ENERGY: LEVEL (DB) = 29.24436 CENTER (NHZ) = 317.7191 WIDTH (NHZ) = 3.653117 SKEW (NHZ) = 1.365556E-62 WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) L(DB) LDX (MHZ) HIX (MHZ) LO(MHZ) HI (MHZ) CTR (MHZ) 8.00000 316.51764 0.00 316.51764 -0.24 316.51764 316.51764 316.51764 8.90000 316.51764 -13.50 316.38715 319.84407 0.50 316.38715 319.04407 317.71561 2.65692 317.69485 2.64947 316.34659 317, 69684 2,73394 -14.97 319.08368 1.00 316.34659 319.08368 317.71515 2.73789 316.29916 317.69992 2.88348 -16.73 316, 29916 319.14630 2.00 319, 14630 317.72272 2.84714 -17.85 315,26485 3.80 316.26486 319.18423 317, 72455 2,91937 317.71579 2.83438 319. 18423 -26.38 316.23685 319.21567 4.00 2.97882 317.71616 2.87938 316.23685 319, 21567 317.72626 -20.34 316.21262 316, 21262 319.24289 3.03027 317.71616 2.87938 319.24289 317.72775 5.00 -23, 46 6.00 316.19189 319.26718 317.72955 3.07529 317.71680 2.98886 316.19189 319.26718 316.12735 -27.20 10.00 319.34845 317.73389 3.21310 317.71768 2.92392 316.12735 319.34845 2, 93459 -41.84 316.02390 28.00 316.02390 319, 45364 317.73877 3.42975 317.71915 319, 45364 315.95914 315.95914 38, 98 319.52792 317.74353 3,56879 317.71989 2,93494 **-47.82** 319.52792 315.93463 319.55649

317.71909

3,62186

BAND (MHZ) 316.575 318.825

LMIN(DB) -0.17

40.00

LMAX (DB) 0.19 LDEL (DB) 0.36

PMIN (DEG) -1262.30PMAX (DEG) 1255, 48

PDEL (DEG) 2517.77

ile: 4ARBBBBA.DAT

Passband Symmetry = 0.0 dB

317.74554

2,93498

-50.33

315, 93463

319.55649

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05/28/98
                         14:05
 PHONON CORPORATION
 FILE=4CR8B62A.DAT 14:04:13 05-28-1998
 PN 188834 826 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX
 06-23-1997 HP8753, SSCF, SSFFIX, SSREF
 FREDUENCY (MRZ): CENTER= 326.7 MIDTH= 9 INCR.= .85 SYSTEM BANDMIDTH= 2.25
                                 PHASE (DEG) =-3228.638
                                                         BELAY(US) = 0 SLDPE(US/NHZ) = 0
 REFERENCES: LOSS(DB) = 28.78273
 RMS ERRORS: LOSS(DB)= .1415508
                                  PHOSE (DEG) = 742, 3314
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED .9 NHZ/DIV
 LOSS TO DB/DTV
LOSS 1 DB/BIV
      .9 MHZ/DIU
PEAK: LEVEL(DB)= 28,42048 FREQ(NHZ)= 325,5613 DELAY(US)=-3,155596 SIDELDBE(DB)=-41,16482
ENERGY: LEVEL (DB) = 28.89982 CENTER (NHZ) = 326.7595 MIDTH (NHZ) = 3.875975 SKER (NHZ) = 1.597321E-62
 L(DB)
          LD (MHZ)
                      HI (MHZ)
                                  CTR(MHZ)
                                              NID (NHZ) AV-CTR (NHZ) AV-NID (NHZ) AV-SL (DB) LOX (NHZ)
                                                                                                          HIX (MHZ)
 -0.36
         325.56131
                      325.56131
                                  325,56131
                                                 9.00008
                                                           325.56131
                                                                          8. 80000
                                                                                      9.00
                                                                                             325,56131
                                                                                                          325,56131
         325.40073
  0.50
                      328. 13492
                                  326, 76782
                                                 2,73419
                                                           325.76678
                                                                         2,72298
                                                                                             325.48973
                                                                                                          328, 13492
                                                                                    -13.66
  1.00
         325.37198
                      328, 16742
                                  325.76971
                                                 2.79544
                                                           325.76514
                                                                         2.88913
                                                                                    -15.29
                                                                                             325.37198
                                                                                                          328, 16742
  2.00
         325.32378
                      328.21176
                                  326.76773
                                                 2,88886
                                                           326.76511
                                                                         2.87932
                                                                                    -17.38
                                                                                             325, 32370
                                                                                                          328, 21176
         325, 28922
  3.00
                      328, 24457
                                  326.76691
                                                 2, 95535
                                                           326.75143
                                                                         2.90541
                                                                                    -18.42
                                                                                             325, 28922
                                                                                                          32B, 24457
  4.88
         325.26093
                      328.27124
                                  326,76688
                                                 3.01031
                                                           326, 76370
                                                                          2.93839
                                                                                    -19.76
                                                                                             325,26093
                                                                                                          328, 27124
  5.00
         325, 23703
                      328, 29422
                                  326.76563
                                                 3.85719
                                                           325, 75449
                                                                         2.94838
                                                                                    -21.17
                                                                                             325, 23703
                                                                                                          328, 29422
  6.00
         325, 21594
                     328.31458
                                  326.76526
                                                 3.09863
                                                                                    -22.84
                                                                                             325.21594
                                                           326. 76221
                                                                         2.96322
                                                                                                          328, 31458
 10.00
         325.14963
                      328.37912
                                                 3.22949
                                                                          2.98549
                                                                                    -28.80
                                                                                             325.14963
                                  326.75437
                                                           326. 75827
                                                                                                          328, 37912
         325.04321
 20.00
                     328.48883
                                  326. 76282
                                                 3.43762
                                                           326.75937
                                                                         2.99366
                                                                                    -48.68
                                                                                             325.04321
                                                                                                          328, 48883
         324.97461
 30.00
                     328.54126
                                  326.75793
                                                 3,56665
                                                           326, 75943
                                                                         2.99486
                                                                                    -47.69
                                                                                             324.97461
                                                                                                          328, 54126
         324.92731
 40.80
                      328.57147
                                  326.74939
                                                 3.64417
                                                           326.75946
                                                                         2,99411
                                                                                    -50.70
                                                                                             324.92731
                                                                                                          328, 57147
BAND (MHZ)
            325.575
                      327.825
```

BAND (MHZ) 325, 575 32 LMIN (DB) -0, 31 LMAX (DB) 0, 21 LDEL (DB) 0, 53 PMIN (DEG) -1256, 42 PMAX (DEG) 1258, 41 PDEL (DEG) 2514, 83

File: 4CR8B82A.DAT Passband Symmetry = 9.1 dB

```
FILE=4ER8B829. DAT 14:04:17 05-28-1998
PN_100834_826 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N WIDE_521
06-23-1997 HP8753, SSREF, SSREF, SSREF
 YEQUENCY (MHZ): CENTER= 500.5 HIDTH= 999 INCR. = .208125 SYSTEM BANGNIDTH= 999
                                PHOSE (DEG) = 1373.017 DELAY (US) = 4.732852 SLOPE (US/MHZ) = 0
.cFERENCES: LOSS(DB) = 28.92789
RMS ERRORS: LOSS(DB)= 7.888999 PHASE(BEG)= 18193.56
PLOT SCALES: LOSS: 10 DB/DIV VS. FREQ 99.9 MHZ/DIV
LOSS TO DB/DTV ..
PEAK: LEVEL (DB) = 28.36957 FREQ (NHZ) = 327.8936 DELAY (US) = 6.336682 SIDELOWE (DB) =-42.15535
ENERGY: LEVEL (DB) = 29.86486 CENTER (NHZ) = 322.5975 WIDTH (NHZ) = 6.128643 SKEW (NHZ) = 381.532
                                             WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ)
                                                                                                        HIX (MHZ)
 L(DB)
          LO(MHZ)
                      HI (MIZ)
                                 CTR (MHZ)
                                                                        8.00000
                                                                                    8. 80
                                                                                           327.89355
                                                                                                       327.89355
 -0.56
         327.89355
                     327.89355
                                 327.89355
                                               8, 90000
                                                         327.89355
                                                                        2.82916
                                                                                  -25.04
                                                                                           316.38889
                                                                                                       327.89355
  0.50
         325.39484
                     328.15189
                                 326.77338
                                               2.75785
                                                          325.78996
                                                                                 -25.28
                                                                        2.98729
         325.35867
                                                         326.79178
                                                                                           316.34634
                                                                                                       328, 17441
                     328.17441
                                 326.76654
                                               2.81573
  1.00
                                                                        2.98729
                                                         326, 79178
                                                                                 -25.28
                                                                                           316.38518
                                                                                                       328, 22250
         325, 31238
                     328, 22258
                                 326, 76746
                                               2.91013
  2.00
                                                                        2.98729
                                                         326, 79178
                                                                                 -25, 28
                                                                                           316.25500
                                                                                                       328, 26651
         325, 28137
                     328, 26651
                                 326.77393
                                               2.98514
  3.00
                                                         326.74985
                                                                        3.07126
                                                                                 -25.41
                                                                                           316.20813
                                                                                                       328.29685
         325, 25748
                     328, 29685
                                 326,77676
                                               3. 83857
  4.00
         325, 23566
                                                         326, 74985
                                                                        3.87126
                                                                                 -25.41
                                                                                           316.18161
                                                                                                       328.31741
                     328.31741
                                 326.77655
                                               3. 88176
  5.00
         325.21429
                     328.33429
                                 325,77429
                                               3.12000
                                                         326,74985
                                                                        3.87126
                                                                                 -25.41
                                                                                           316.16333
                                                                                                       328.33429
  6.00
                     328.38683
                                                         326.76093
                                                                        3.89223
                                                                                  -25.44
                                                                                           316.11807
                                                                                                        328.38863
 10.00
         325.14365
                                 326.76224
                                               3.23718
         325.04514
                     328.43866
                                               3.39352
                                                         326.75946
                                                                        3.89487
                                                                                  -25.44
                                                                                           316.06812
                                                                                                       328.43866
                                 325.74188
 20.00
                                 326.74420
                                               3.58449
                                                         325, 75946
                                                                        3,09487
                                                                                  -25.44
                                                                                           316.02573
                                                                                                        328.49646
         324.99197
                     328, 49646
 30.00
         324.93884
                     328.55429
                                 326.74658
                                               3.61545
                                                         326,75946
                                                                        3.89487
                                                                                  -25,44
                                                                                           315.98337
                                                                                                       328.55429
 40.00
              1.000 313,000 331.000 1000.000
BAND (NHZ)
LMIN(DB)
                46.90
                            -8.46
                                      46.21
LMAX (DB)
                 108.00
                            68,28
                                      76.12
                                      29.91
                 61.10
                            68.74
LDEL (DB)
PMIN(DEG)
               -9999,00
                           722.48 -9999.00
PMAX (DEG)
                2602.26
                          4116.51
                                   3797.99
PDEL (DEG)
               12601.26 3394.03 13796.99
TLE: 4ER8B82A.DAN Dut-of-band Rejection: PEAK= 46.2 dB WIDTH= 6.800 MHz
```

```
05/28/98
                       14:06
PHONON CORPORATION
FILE=4FR8B82A.DAT 14:84:19 85-28-1998
PN_188834_826 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX
06-23-1997 HP8753, SSREF, SSREF, SSREF
                                        INCR. = . 85 SYSTEM BANDWIDTH= 38
                              WIDTH= 38
FREQUENCY (NHZ): CENTER= 322.2
                              PHASE (DEG) = 291.5657 BELAY (US) = 1.872925 SLOPE (US/MHZ) = 0
REFERENCES: LDSS(DB)= 28.92789
RMS ERRORS: LOSS(DB) = 23.53657
                               PHASE (DEG) = 1183.948
PLOT SCALES: LOSS: 10 DB/DIV VS. FRED 3 NHZ/DIV
LOSS TO DEVELO
```

FREQ 3 MHZ/DIV
PEAK: LEVEL(DB) = 28.42849 FREQ(MHZ) = 325.5613 DELAY(US) = .5982491 SIDELESE(DB) = -41.16481

ENERGY: LEVEL (DB) = 29.06124 DENTER (MHZ) = 322.4353 WIDTH (MHZ) = 6.119556 SKEH (MHZ) = -.3693376 HID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) L(DB) CTR(NHZ) LOX (MHZ) HIX (MHZ) LO (MHZ) HI (MHZ) 8.90000 325, 56128 325, 56128 -0.51 325.56128 325.56128 325.56128 8.00000 325.56128 8.80 326.74484 2.86858 -9.48 316, 48356 328.14600 0.59 325.39227 328.14699 326.76913 2.75372 1.00 325.36368 328.17505 326.76935 2.81137 326, 76611 2,98461 -9.54 316.35483 328, 17565 2.80 325.31812 328.21701 326.76758 2.89898 326.76511 2.97719 -9.63 316.30585 328, 21791 -9.66 2.96390 326, 75143 3.00520 316.26938 328.24869 3.60 325, 28479 328, 24869 326.76672 3.81755 -9.69 4.00 325.25720 328.27475 326.76599 325.76378 3.82999 315.24966 328, 27475 3.66351 -9.71 325, 23380 326.75446 3.04860 316, 21588 328, 29730 5,00 328.29739 326.76556 -9.73325, 21307 3.16431 326.75221 3.86394 316. 19473 328, 31738 6.00 328, 31738 326, 76523 -9.74 3.23349 325, 75827 3.08880 316, 12933 328, 38110 10.00 325.14761 328, 38110 326.76434 3.09542 -9.72316.02505 328.48193 20.00 325, 84292 328.48193 326, 76196 3.43991 326, 75937 30.00 324.97379 328.54190 326.75784 3.56812 326.75943 3.89583 -9.70 315, 95969 328, 54190 3.89588 -9.69 315, 93494 328.57187 40.00 324.92667 328.57187 326.74927 3.64528 326, 75943

BAND (MHZ) 316.575 318.825 325,575 327,825 LMIN(DB) -8,46 -0.02 -0.50 LNAX (DB) 79.21 0.34 8.97 LDEL (DB) 9.36 79,72 0.53 PMIN(DEG) -65.11 -667.33 -1999.81PMAX (DEG) 969.31 433.51 39.66 PDEL (DEG) 1034.41 1100.84 1031.47

FILE: 4FR&B&2A.DAT Out-of-band Rejection: PERK= 41.4 dB WIDTH= 8.808 MHz

PHONON CORPORATION

FILE: 4FR8B82A.DAT (+SSCF)

PN_188834_826_FINAL_FUNCTIONAL_TEMP:R_PROTOFLIGHT_/N_DUAL_SXX 86-23-1997_HP8753, SSREF, SSREF, SSREF, SSCF

TERENCES: LOSS(08)= 28.92789 PHASE(DE6)= 291.5657

DELAY(US) = 1.872925 SLOPE(US/NHZ) = 0

ROMINDAGS	CHARACTERISTICS	MEASUREMENT

	LOSS (DB)	PHASE (DEG)
315.000	53.69	983.12
315.72 8	57.12	1883.93
316.440	0.24	1037.64
317.160	0.09	788.94
317.880	8.23	379.87
318, 688	0.14	29,48
319.328	8.87	-389,85
320,040	41.47	-385, 93
328, 768	52.89	-597.91
321, 488	70.94	-448.66
322.208	49.30	-291.57
322, 928	55.88	62.14
323. 548	58.68	-19.46
324.360	57.21	381.78
325, 888	15.78	265.48
	-0.29	-63.36
325.800	,	
326.529	-0.10	-401.53
327.248	-0.00	-738.78
327.968	-0.46	-1874.74
328.680	40.47	-1218.52
329 . 400	52.0 3	-1563.22

4

		ELECTRICAL TEST DATA SHEET	M .BGS	
AEROJET PI	ART: 133	1576-4 PHONON PART: 188826, SERI 4 TITLE: MGR DATE: 6/24/9	TIME: 10:00 MM	•
TESTED BY	PUKL	TOWN	1 medicine	•
EQUIPMENT:	LIR D75	3D SERIAL:3419A87982 CAL D	UE:18/12/97_	
EMOTALEMI	HP 347		UE:7/8/97	
į	מדט אמ	OH SUMMER LETS SHOULD BE S		
PARAGR	XPH	REQUIREMENT TITLE	DATA	P/F
REQ.	Q/ATP			_
3.2.1.1	5.2.1	OPERATING TEMPERATURE 3	<u>5.6</u> C	P
3.2.1.3	5.2.3	CENTER FREMENCY &		
3.2.1.4		CENTER FREQUENCY STABILITY		_
			7.786 M12	P
:			6.769 MHz	<u> </u>
3.2.1.5	5.2.4	3 dB BANDWIDTH:		_
:			2.918 HHz	P
:			2.953 Miz	<u>p</u>
3.2.1.6	5.2.5	PASSBAND SYMMETRY		_
		LO: /0.5 dB	0.1 dB	<u>P</u>
i .		1121 TOTO W	0,1 dB	<u> </u>
3.2.1.7	5.2.6	PASSBAND RIPPLE	_	_
		316.575-318.825 MHz: /1.8 dB	9.3 B	p
:		325.575-327.825 NHz: /1.0 dB	0.5 dB	<u> </u>
3.2.1.8	5.2.7	INSERTION LOSS		_
•			29.2 dB	P
:			28.9 dB	<u> </u>
3.2.1,9	5.2.8	INSERTION LOSS VARIATION		_
			0.1 dB	<u>P</u>
			2.1 dB	<u> </u>
3.2.1.10	5.2.9	AMPLITUDE BALANCE		_
		LO,HI: /0.5 dB	0.3 dB	<u>p</u>
3.2.1,11	5.2.10	OUT-OF-BAND REJECTION		
		BAND PEAK (dB)		
		WIDE: 1-313,331-1000 MHz: 45.9	<u>9.000</u>	
		DUAL: 313.000-315.585,		
		319, 815-324, 585,	0.000	
ļ		328.815-331.0 MHz: 49.1	0,606	
		PEAK: 35.8/ dB 48.1	_ dB	+
1		WIDTH: /0.6 MHz	8.999 MHz	<u>p</u>
3.2.1.12	5.2.11	SHAPE FACTOR	4 84 W.:Ll.	0
!		LD: /1.30 Unitless	1.24 Unitless	p
		HI: /1.38 Unitless	1.23 Unitless	
3.2.1.14	5.2.12	VSMR (RETURN LOSS)	_	
;		316.575-318.825,325.575-327.825 141	re en	n
		DUAL S11: 7.5/ dB	9.6 dB 8.5 dB	-
		BUAL S22: 7.5/ dB	6-5 dB	<u></u>
4.8.2	5.2.14	LINITED FUNCTIONAL TESTS	O Miz	P
		CENTER FREEMENCY: -0.1/8.1 MHz	O MHz	ঠ
		3 dB BANDMIDTH: -8.06/8.06 MHz INSERTION LOSS: -8.5/8.5 dB	O #B	اطماء اماء
NONE	5015	DATA SHEET SUPPRY		
INDIAC :	J. C. 13	(PASS/FAR.)	P (BP)	
		VERRAL PALL		
PHONON CO	RPORATTI	nn.	CAGE: 6Y858	
7 HERMAN			TEL: 283-651-	0 211
SIMSBURY,		78	FAX: 203-651-	8618

PHONON CORPORATION

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FILE=4AH8B82A.DAT 14:04:26 05-28-1998
 N 188834 826 FINAL FUNCTIONAL TEMP:H PROTOFLIGHT /N DUAL_SXX
 3-23-1997 HP8753, SSCF, SSFFIX, SSREF
FREQUENCY (NHZ): CENTER= 317.7
                                 WIDTH= 9 INCR.= .05
                                                          SYSTEM BANDWIDTH= 2.25
                                 PHASE (DEB) = 4185.612
                                                          DELAY (US) = 8 SLDPE (US/MHZ) = 0
REFERENCES: LOSS(DB)= 29.19852
RMS ERRORS: LOSS(DB)= .0843787
                                  PHASE (BEG) = 743.5253
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FREQ .9 WHZ/DIV
LOSS TO DB/DIV
LOSS 4 DB/BIU ..
FREG .9 MHZ/DIU
PEAK: LEVEL (DB) = 28.96238 FRED (MHZ) = 316.5211 DELAY (US) =-3.065264 SIDELEBE (DB) =-41.7466
ENERGY: LEVEL (DB) = 29.36138 CENTER (MHZ) = 317.7214 WIDTH (MHZ) = 3.851783 SKEW (MHZ) = 1.129812E-62
          LO(MHZ):
                      HI (MHZ)
                                  CTR (NHZ)
                                               WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ)
                                                                                                          HIX (MIZ)
L(DB)
 -0.23
         315.52106
                     315.52106
                                  316, 52166
                                                 8,00000
                                                           316,52106
                                                                          8.00000
                                                                                      8.00
                                                                                              316.52106
                                                                                                          316.52106
  0.50
         316, 38791
                     319.64599
                                  317.71695
                                                 2,65888
                                                           317, 69617
                                                                          2.64953
                                                                                    -13.52
                                                                                              316, 38791
                                                                                                          319, 84599
         316.34768
                     319.08432
                                  317.71594
                                                 2.73672
                                                           317.69830
                                                                          2,73397
                                                                                    -14.99
                                                                                              316.34760
                                                                                                          319.08432
  1.00
         316.30148
                      319, 14670
                                  317.72409
                                                 2,84521
                                                           317.71741
                                                                          2.77178
                                                                                    -15,82
                                                                                              316.38148
                                                                                                          319, 14670
  2.00
                                                                                    -17.88
                                                                                              316,26672
  3.00
         316, 26672
                      319, 18478
                                  317.72577
                                                 2.91886
                                                           317.71744
                                                                          2.83413
                                                                                                          319, 18478
                                                                                              316.23871
  4.88
         316, 23871
                      319.21619
                                  317.72745
                                                 2,97748
                                                           317.71882
                                                                          2.87898
                                                                                    -28.42
                                                                                                          319.21619
                                                 3. 62893
                                                                                    -20.38
                                                                                              316.21457
         316.21457
                     319.24350
                                                           317.71882
                                                                          2.87899
                                                                                                          319.24350
  5.00
                                  317.72983
  6.00
         316, 19388
                                  317.73000
                                                           317.71884
                                                                          2.99736
                                                                                    -23.50
                                                                                              316.19388
                                                                                                          319, 26773
                     319.26773
                                                 3.07385
 10.00
         316.12939
                     319.34097
                                  317.73517
                                                 3.21158
                                                           317, 71985
                                                                          2.92305
                                                                                    -27.25
                                                                                              316.12939
                                                                                                          319.34097
         316.02585
                                                                                              316.02585
                     319, 45432
                                  317.74008
                                                                          2.93362
                                                                                    -41.14
                                                                                                          319.45432
 20.00
                                                 3.42847
                                                           317.72144
         315.96138
                                                 3.56516
 30.00
                     319.52649
                                  317.74398
                                                           317.72137
                                                                          2,93396
                                                                                    -47.85
                                                                                              315.96133
                                                                                                          319.52649
                                                 3.62665
 40.00
         315.93256
                     319.55920
                                  317.74588
                                                           317.72137
                                                                          2,93466
                                                                                    -58.29
                                                                                             315.93256
                                                                                                          319,55920
BAND (MIZ)
            316.575
                     318.825
                   -0. 16
LMIN(DB)
LMAX (DB)
                   0.20
LDEL (DB)
                   0.36
PMIN (DEG)
                -1262.45
PMAX (DEG)
                1255, 49
 "EL (DEG)
                2517.94
 .le: 4AH8B62A.DAT
```

Passband Symmetry = 8.1 dB

```
PHONON CORPORATION
FILE=4CH8B82A.DAT 14:84:30 85-28-1998
PN_188834_826 FINAL_FUNCTIONAL TEMP:H PROTOFLIGHT /N DUAL_SXX
96-23-1997 HP8753, SSCF, SSFFIX, SSREF
FREQUENCY (NHZ): CENTER= 326.7 WIDTH= 9
                                          INCR. = .05
                                                       SYSTEM BANDMIDTH= 2.25
                                                       BELAY (US) = 0 SLOPE (US/MHZ) = 0
                                PHASE (DE6) =-2824.175
REFERENCES: LOSS(DB)= 28.91658
RMS ERRORS: LOSE(DB)= .1389234
                                PHOSE (DEG) = 742, 4118
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED .9 WAZ/DIV
TOSS, IG. MB\ABIA.
LOSS 1 DB/BIU
FREG .9 MHZ/DIU
PEAK: LEVEL (DB) = 28.57363 FREQ (MHZ) = 325.5639 DELAY (US) =-3.151983 SIDELBBE (DB) =-40.59839
WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ)
                                                                                                     HIX (MHZ)
L(DB)
         LO (MHZ)
                     HI (MHZ)
                                CTR (MHZ)
                                                                                         325, 56390
                                                                                                     325, 56390
                                                                                  0.88
 -0.34
        325, 56390
                    325,56390
                                325, 56390
                                              8.99998
                                                        325.56390
                                                                      8.00000
                                                                                                     328.13666
                                                        325.76889
                                                                      2.72172
                                                                                -13.78
                                                                                         325.48564
 0.50
        325.49564
                    328, 13666
                                326,77115
                                              2.73182
                                                        326.76859
                                                                      2.88833
                                                                                -15.33
                                                                                         325.37640
                                                                                                     328, 16882
        325.37648
                    328, 16882
                                 326, 77261
                                              2.79242
 1.00
                                                                                         325.32779
                                                                                                     328_21298
 2,08
        325.32779
                    328.21298
                                 326, 77939
                                              2.88519
                                                        326.76801
                                                                      2.87801
                                                                                -17.35
        325, 29390
                                                                      2.98438
                                                                                         325, 29300
                                                                                                     328, 24585
                    328, 24585
                                326.76941
                                              2.95285
                                                        326.75467
                                                                                -18.45
 3.00
                                              3.00824
                                                                      2,92861
                                                                                -19.82
                                                                                         325.26434
                                                                                                     328, 27258
        325.26434
                    328, 27258
                                326, 75846
                                                        326, 76703
 4.90
        325.24030
                                                        326.75886
                                                                      2,94684
                                                                                -21.28
                                                                                         325, 24839
                                                                                                     328, 29559
 5.00
                                326.76794
                                              3,05538
                    328, 29559
 5.00
        325.21915
                    328.31681
                                 326.76758
                                              3.09686
                                                        325.76598
                                                                      2.96111
                                                                                -22.91
                                                                                         325, 21915
                                                                                                     328, 31681
                                              3,22888
                                                        326, 76498
                                                                      2.97919
                                                                                -26, 70
                                                                                         325, 15265
                                                                                                     328, 38865
 10.00
        325.15265
                    328.38065
                                326.75666
                                                        326.76364
        325.84598
                                              3.43671
                                                                      2.99186
                                                                                -48.51
                                                                                         325.04590
                                                                                                     328, 48268
 28.80
                    328.48268
                                326.76425
        324.97699
30.00
                                              3.56769
                                                        326, 76373
                                                                      2,99146
                                                                                -47.62
                                                                                         324, 97699
                                                                                                     328.54468
                    328.54468
                                326.76883
40.00
                                                                      2.99151
                                                                                -50, 98
                                                                                         324.93045
                                                                                                     328, 57315
        324.93845
                    328, 57315
                                326, 75180
                                              3.64270
                                                        326,76373
           325.575 327.825
BAND (MHZ)
```

LMIN(DB) -6.36

LMAX(DB) 0.23

LDEL(DB) 0.52

PNIN(DEG) -1256.41

PNAX(DEG) 1258.42

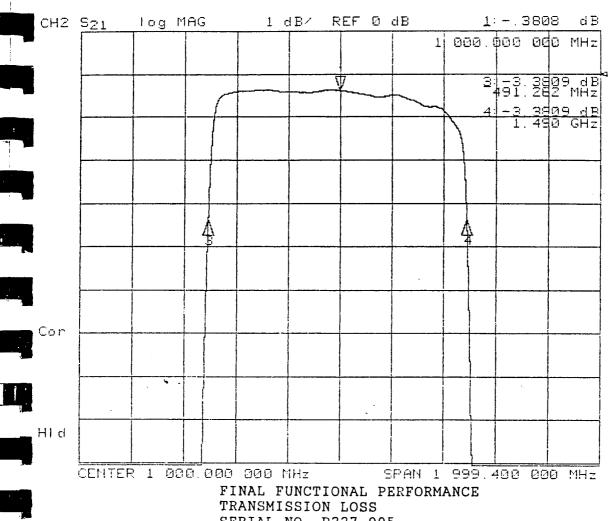
PDEL(DEG) 2514.83

File: 4CH08028.DAT Pappband Symmetry - 0.1 dB

Channel 15 Bandpass Filter

IF Filter (S/N: 1331559-1, S/N: 227-005)

APPENDIX A	ACCEPTAN	ICE TEST REPO	RT	
BANDPASS FILTER MODEL HL1 AEROJET 1331559-1 REV.	000-1000-10	0881 S/N <u>PZZ</u>	<u>7-</u> 005	
3.0 dB BANDWIDTH ACCEPTANCE TEST PROCEDU 63-0005-02 PARA 4.5.3	RE .	-10°C	+15°C	+40°C
{7} UPPER 3.0 dB BANDEDGE		1 <u>490.04</u> MHz (1480.0-1500.0)	1 <u>년88.57</u> Mhz (1480.0-1500.0)	ነ <i>ዛ§ገ.ዛ</i> ር _{MHz} (1480.01500.0)
(8) LOWER 3.0 dB BANDEDGE		491.26MHz (480.0-500.0)	4 <u>90,54 M</u> hz (480.0-500.0)	୳ <u>ଟ୍ୟ.ଟ</u> ୍ଲMHz (480.0-500.0)
{9} 3.0 dB RELATIVE BANDWIDT	H	998.78 MHz (980.0-1020.0)	9 <u>98.03</u> Mhz (980.0-1020.0)	9 <u>97.51</u> MHz (980.0-1020.0)
{10} ADD {7} AND {8} ÷ 2 =		9 <u>90.45</u> MHz (1000.0 NOM)	<u>989.‰</u> MHz (1000.0 NOM)	4 <u>88.65</u> Mhz (1000.0 NOM)
{10a} RECORD MEASURED TEM	PERATURE	- <u> 1.6</u> °C (-15.0 TO -10.0)	(12.5 TO 17.5)	+ <u>40, </u>
(6) ATTACH TRANSMISSION LO	SS	<u>-√··</u> (√)	(√)	<u> </u>
PASSBAND RIPPLE ACCEPTANCE TEST PROCEDUF 63-0005-02 PARA 4.5.4	E	-10°C	+15°C	+40°C
{11a} MIN INSERTION LOSS FRE	Q Q	6 <u>95.09</u> MHz	675.16Mhz	6 <u>75.10</u> MHz
MIN INSERTION LOSS PER	RFORMANCI	E <u>-0,36</u> dB	- <u>0.39</u> dB	- <u>0.41</u> dB
{11b} 75% BW LOWER BANDEDO	SE FREQ	527.79 MHz	576.69 Mhz	5 <u>24.78</u> MHz
75% BW LOWER BANDED	GE I.L. PERF	- <u>O.(O</u> dB	0.65 dB	- <u>0.69</u> dB
{11c} 75% BW UPPER BANDEDG	E FREQ	12 <u>77.79</u> MHz	12 <u>76.69</u> Mhz	12 <u>74.78</u> MHz
75% BW UPPER BANDEDO	SE I.L. PERF	- <u>0،60</u> dB	- <u>0.65</u> dB	- <u>0.69_</u> dB
{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})		<u>0.24</u> dB	<u> </u>	<u>O.28</u> dB
{11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})		<u>0.24</u> dB	0.26 dB	<u>0.28</u> dB
Prepared in accordance with MIL-STD-100				
CONTRACT NO.	SIZE (CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES II	7.0	/63/0502APAJ.DOC	SHEET	13



SERIAL NO. P227-005

-10C DATA

MARKER PARAMET

MARKER TRACKING

OPR: R. HOGGATT DATE FEB 03 1997 unnei 2

OFF

MARKER 1	550.000000 MHz OFF	1000.000000 MHz 3808 dB
MARKER 2	1450 000000 MHz OFF	990.653385 MHz OFF
MARKER 3	525.000000 MHz OFF	491.262205 MHz -3.3809 dB
MARKER 4	1375.000000 MHz OFF	1490.044565 MHz -3.3809 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF

OFF

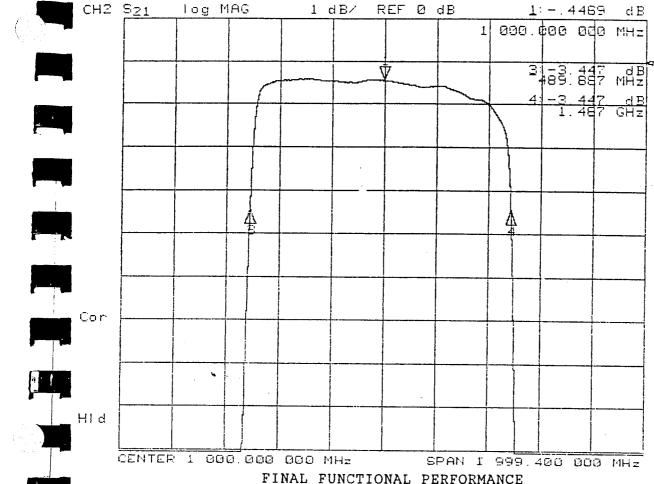
FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P227-005 +15C DATA

MARKER PARAMET

OPR: R. HOGGATT DATE FEB 03 1997 annel 2

7

MARKER 1	550.000000 MHz OFF	1000.000000 MHz 4131 dB
MARKER 2	1450.000000 MHz OFF	989.555293 MHz OFF
MARKER 3	825.000000 MHz OFF	490.538694 MHz -3.4131 dB
MARKER 4	1375.000000 MHz OFF	1488.571893 MHz -3.4131 dB
MKR STIMULUS OFFSET	. 0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P227-005

OFF

OFF

+40C DATA

MARKER PARAMET OPR: R. HOGGATT DATEFEB 03 1997 annel 2

MARKER 1		550.000000 OFF	MHz	1000.000000 4459 dB	MHz
MARKER 2		1.450.000000 OFF	MHz	988.644081 OFF	MHz
MARKER 3		625.000000 OFF	MHz	489.887565 -3.447 dB	MHz
MARKER 4		1375.000000 OFF	MHz	1487.400598 -3.447 dB	MHz
MKR STIM	ULUS OFFSET	0.000000 0 db	MHz	0.000000 0 dB	MHz
REFERENC PLACEMEN MARKER S TARGET V MARKER W	T EARCH	OFF CONTINUOUS OFF -3 dB -3 dB		OFF CONTINUOUS OFF -3 dB -3 dB	

OFF

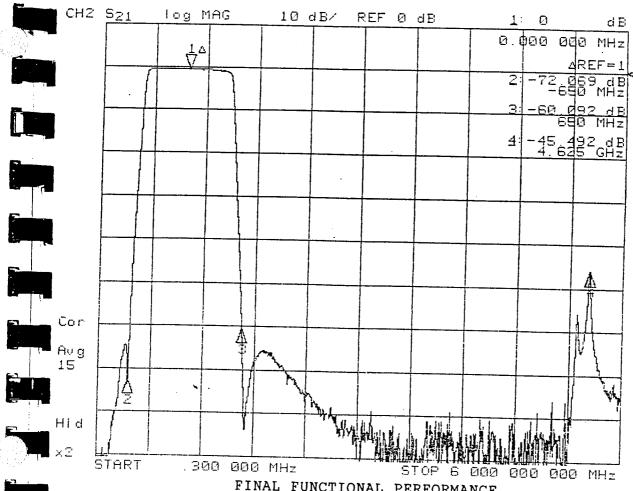
OFF

MARKER TRACKING

APPENDIX A ACCEPTANCE TEST REPORT BANDPASS FILTER MODEL HL1000-1000-10SS1 S/N P227-COS AEROJET 1331559-1 REV. PASSBAND RIPPLE (CON'T) {11f} RECORD PASS/FAIL (0.5 dB MAX) (PASS)FAIL (PASS)FAIL (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** ACCEPTANCE TEST PROCEDURE -10°C +15°C +40°C 63-0005-02 PARA 4.5.5 Fc=1000.0 MHz. REF (5A) FOR INSERTION LOSS @ Fc {12} WORST CASE REJECTION FROM -64.2 dB -64.0 dB -64.1 dB 0.300 MHz TO 350.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13a} WORST CASE REJECTION FROM -60 | dB -60.2 dB -60.5 dB 1650.0 MHz TO 3000.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13b} WORST CASE REJECTION FROM -<u>45.5</u> dB -46.1 dB -47.4 dB 3000.0 MHz TO 8000.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13c} RECORD MEASURED TEMPERATURE -11.6 °C +15.8 °C +40.6 °C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) **{14} ATTACH REJECTION PERFORMANCE** X-Y PLOT(S) TEST PERFORMED BY 12 1066ATT DATE 2/3 NOTE IF TEST WITNESSED BY AESD: ___ GSI: Not Witnessed this time. DLD ***** END OF FUNCTIONAL PERFORMANCE TEST **** **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION** {16} REFERENCE CUSTOMER DRAWING 1331559 **DESCRIPTION OF** DIMENSION AND ACTUAL **MEASUREMENT** TOLERANCE **MEASUREMENT** OVER ALL LENGTH $3.50 \pm .03$ 2.501 MOUNTING HOLE CENTER $0.125 \pm .010$ BETWEEN UPPER MOUNTING HOLES 3.246 3.250 BETWEEN LOWER MOUNTING HOLES 3.246 3.250 Prepared in accordance with MIL-STD-100 CONTRACT NO. SIZE CAGE CODE DWG. NO. REV. Α 57032 63-0005-02 DADEN-ANTHONY ASSOCIATES INC. FILE: ACAD/63/0502APAJ.DOC SHEET

14





FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P227-005

-10C DATA

OPR: R. HOGGATT DATE FEB 03 1997 annel 2

MARKER 1 1000.000000 MHz 1000.000000 MHz OFF Ø dB MARKER 2 1000.000000 MHz -350.000000 MHz OFF -72,069 dB MARKER 3 1000.000000 MHz 1650.000000 MHz -60.092 dB MARKER 4 1000.000000 MHz 5625.018861 MHz OFF -45.492 dB MKR STIMULUS OFFSET 0.000000 MHz 0.000000 MHz 0 dB Ø dB OFF

OFF

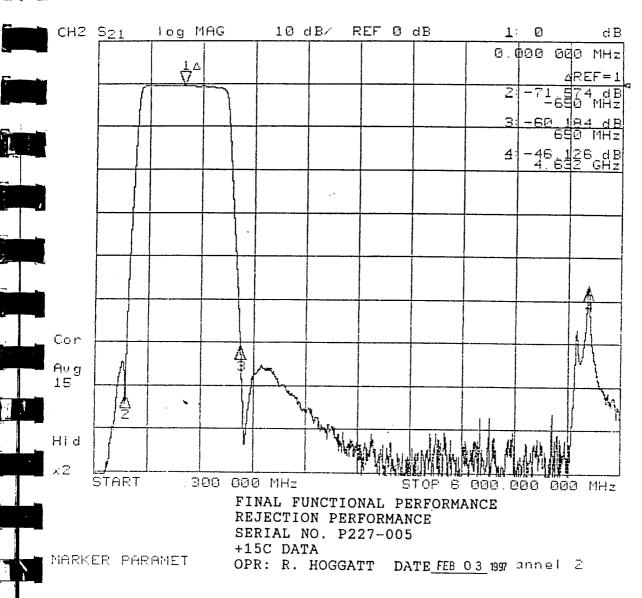
CONTINUOUS

REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE

MARKER PARAMET

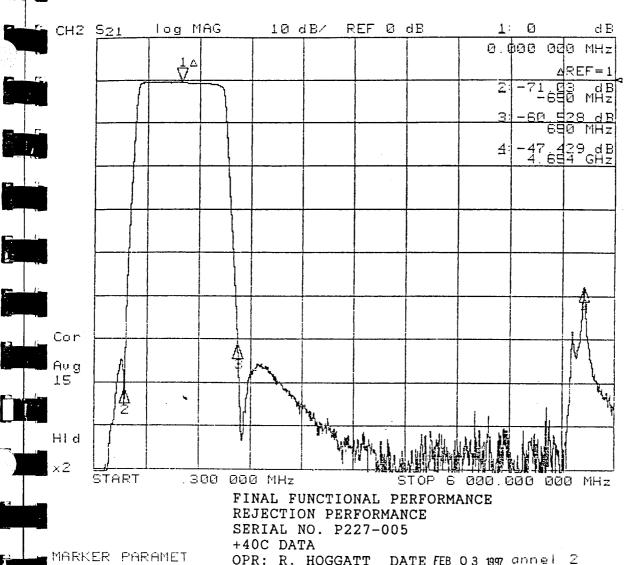
-3 dB −3 dB OFF MARKER TRACKING OFF

MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF OFF



MARKER 1 1000.000000 MHz - 1000.000000 MHz 0 dB MARKER 2 1000.000000 MHz -350.000000 MHz OFF -71.574 dB MARKER 3 1000.000000 MHz -1650.000000 MHz -60.184 dB MARKER 4 1000.000000 MHz 5632.752848 MHz OFF -46,126 dB MKR STIMULUS OFFSET 0.000000 MHz 0.000000 MHz 0 dB 0 dB

REFERENCE MARKER OFF MARKER 1 PLACEMENT CONTINUOUS CONTINUOUS MARKER SEARCH TARGET VALUE OFF OFF -3 dB -3 dB MARKER WIDTH VALUE -3 dB -3 dB OFF OFF MARKER TRACKING OFF OFF



MARKER TRACKING

OPR: R. HOGGATT DATE FEB 03 1997 annel 2

OFF

OFF

MARKER 1	1900.909000 MHz OFF	1000.000000 NHz 0 dB
MARKER 2	1000.000000 MHz OFF	350.000000 MHz -71.03 dB
MARKER 3	1000,000000 MHz OFF	1650.000000 MHz -60.528 dB
MARKER 4	1000.000000 MHz OFF	5654.951771 MHz -47.429 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB	MARKER 1 CONTINUOUS OFF -3 dB -3 dB

-3 dB

OFF

OFF

APPENDIX A

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL1000-1000-10SS1 S/N_P227-005 AEROJET 1331559-1 REV.____

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +21.9 °C (+19°C TO +29.0°C)

(15) ATTACH PASSBAND PERFORMANCE X-Y PLOT

/(1)

{24} TEST POINT MATRIX

REF	FREQ	UNII	VALUE	REF	FREQ	UNIT	VALUE
F1	1.0	MHz	- <u>%5.0 dB</u>	F11	1000.0	MHz	-0.418 dB
F2	10.0	MHz	<u>- 93.3 dB</u>	F12	(*) 1100.0	MHz	-0.58 dB
F3	100.0	MHz	<u>-91.7 dB</u>	F13	(*) 1200.0	MHz	-0.59 dB
F4	300.0	MHz	<u>−66.0 dB</u>	F14	1300.0	MHz	- U.79 dB
F5	400.0	MHz	<u>-37.0 dB</u>	F15	1400.0	MHz	-1.02 dB
F6	500.0	MHz	<u>-7.01</u> dB	F16	1500.0	MHz	-6.22 dB
F7	600.0	`MHz	<u>-0.49</u> dB	F17	1600.0	MHz	<u>-41.2</u> dB
F8	700.0	MHz	<u>-0.45</u> dВ	-F18	1700.0	MHz	dB ما.63 <u>-</u>
F9	(*) 800.0	MHz	<u>-0.49</u> dB	F19	2000.0	MHz	<u>- 67.0 dB</u>
F10	(*) 900.0	MHz	- <u>0,52</u> dB	F20	5000.0	MHz	-89.6 dB
TEST	PERFORM	IED BY:	72. HOGGATT	DATE	2/4/97	- (Ca	
NOTE IF	TEST WITH	JESSET) BY AESD	GSI		<u>v</u>	

NOTE IF TEST WITNESSED BY AESD_____ GSI ____

Not Witnessed this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

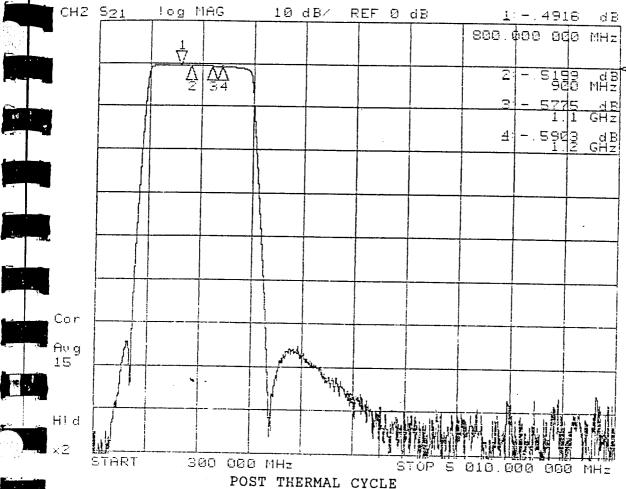
ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX A PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- a.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APAJ.DOC	SHEET	11



PASSBAND CHARACTERISTICS SERIAL NO. P227-005

AMBIENT

MARKER PARAMET

MARKER SEARCH TARGET VALUE

MARKER TRACKING

MARKER WIDTH VALUE

OPR: R. HOGGATT DATE FEB 04 1997 annel 2

MARKER 1	1000.000000 MHz OFF	800.000000 MHz - 4916 dB
MARKER 2	1000.000000 MHz OFF	900.000000 MHz 5159 dB
MARKER 3	1000.000000 MHz OFF	1100.000000 MHz 5775 dB
MARKER 4	1000.000000 MHz OFF	1200.000000 MHz 5903 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	9.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT	OFF CONTINUOUS	OFF CONTINUOUS

CONTINUOUS

OFF

-3 dB

-3 dB

OFF

OFF

CONTINUOUS

OFF

-3 dB

-3 dB

OFF

OFF

		·

GAIN STABILITY AND GAIN COMPRESSION FOR MIXER/AMPLIFIERS AND IF AMPLIFIERS

,				
	•			

GAIN-TEMPERATURE SENSITIVITY FOR MIXER/AMPLIFIERS AND IF AMPLIFIERS

Channel No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Specification (+/-dB/°C)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.04	0.06	0.06	0.06	0.06	0.02
Measured (dB/°C)	-0.009	-0.015	-0.009	-0.013	-0.013	-0.017	-0.02	-0.011	-0.025 +0.005	-0.025 +0.005	-0.025 +0.005, -0.005	-0.025 +0.005, -0.005	-0.025 +0.005, -0.005	-0.025 +0.005, -0.005	-0.017
Total	-0.009	-0.015	-0.009	-0.013	-0.013	-0.017	-0.02	-0.011	+0.005, -0.025	+0.005, -0.025	-0.014 +0.005, -0.044	-0.014 +0.005, -0.044	-0.01 +0.005, -0.04	-0.02 +0.005, -0.05	

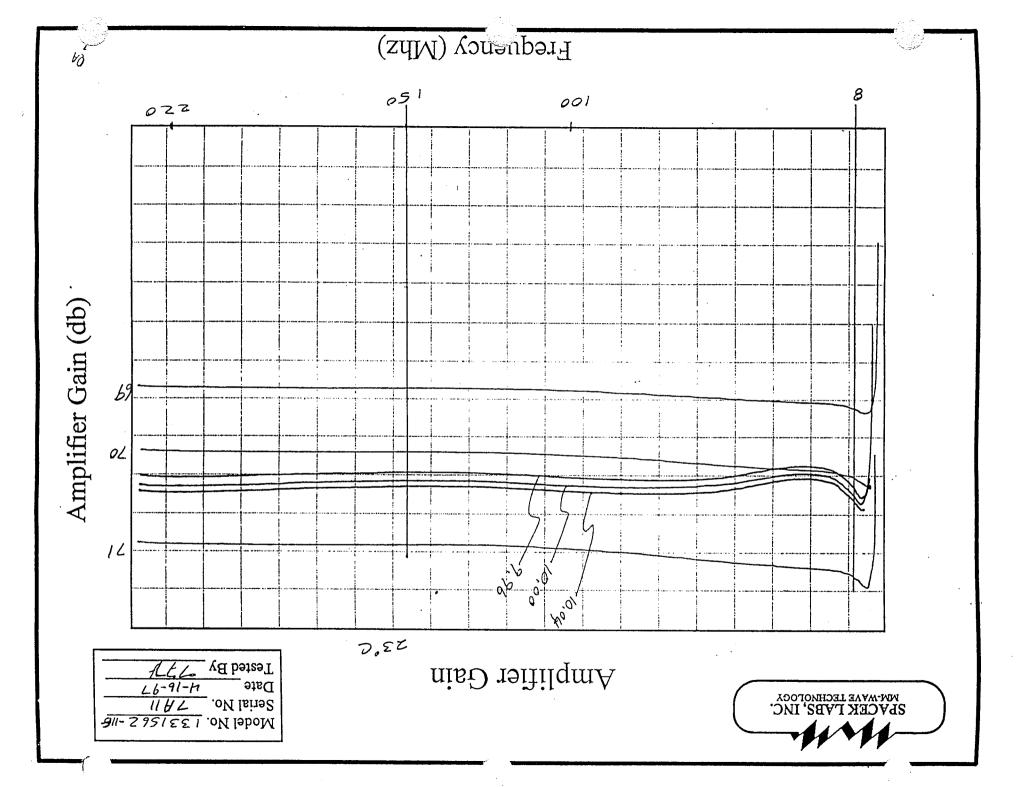
Channel 1 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-11, S/N: 7A11)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GALIV FLATI	YESS IESI: AIP PA	ARAGRAPH	<u>3.1.3</u>		
GAIN FLATN (dB)ppK -		FLATNESS	ACC I	ŒJ	
0,27	0.5		QA		
GAIN VERSU	US VOLTAGE SENS	SITIVITY TE	ST: ATP F	<u> ARAGRAP</u>	H 5.1.4
AMPLIFIER VOLTAGE	GAIN READING (dBm)	ΔG/ΔV	SPEC.	ACC	REJ
10.04 10.00 9,96 AGy =	70,38 70,31 70,23	1.88	2,0	QA _1_	
ΔΟν -	<u>0,15</u> dB			<u>DATE</u>	ACC REI
PART NO	D. <u>1331562-11</u>	. SPAC	CEK QA	4-16-97	QA _1
SER NO.	7A11	TEST	FAILURE:	-	
TESTED	BY: 77	FAILURE	E ANALYSI	S NO	
END DA	TE: <u>4-16-97</u>	·			
END TIM	1E: <u>1630</u>		Spacek Lal 212 E. Gut	•	•

Santa Barbara, CA, 93101



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 70,00			25 To San	
_		-021	0.035dB/°C	QA `	<u>.</u>
T2 + 28	GT2 70,25			1 /	'
		• .035	0.020dB/°C	7	QA :
T3 +8	GT3 70,95				1
		* 1019	0.035dB/°C	OA	
T4 -6	GT4 71,22			1	

* Perform the following calculations and record on the TDS

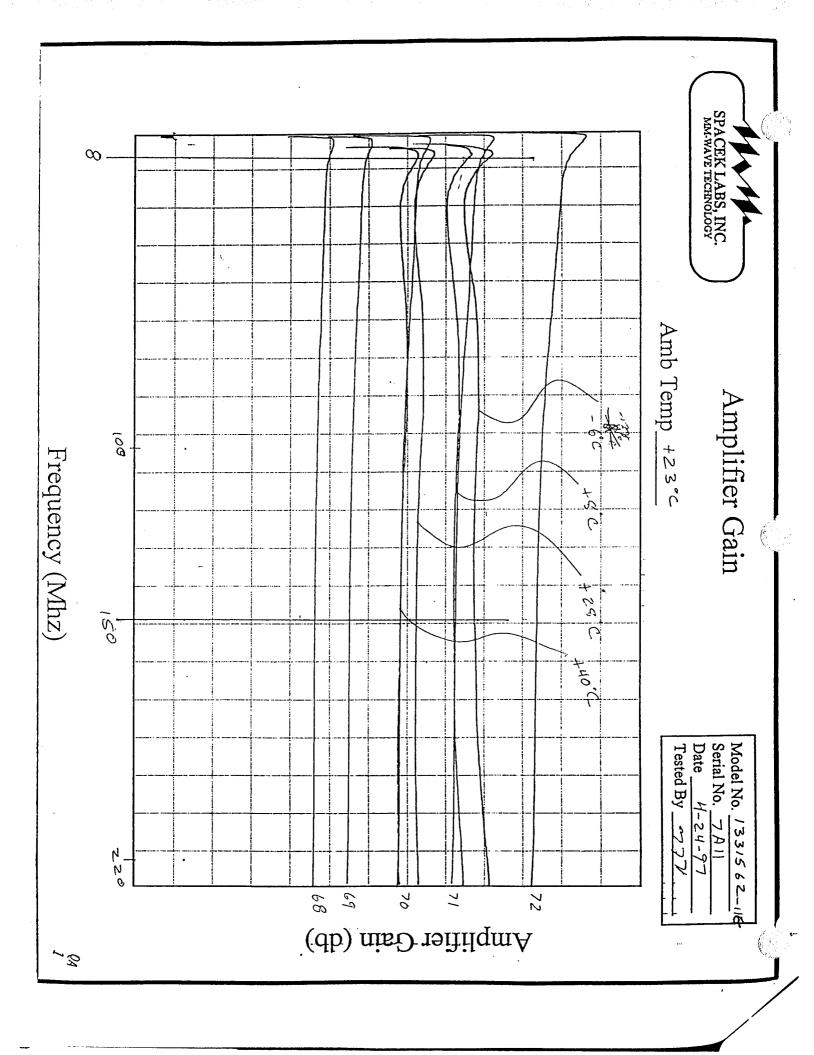
$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{I = 1,2,3,4} \qquad \Delta G_{T} = \frac{1/22}{-dB}$$

$$T_{i} - T_{i+1}$$

$$\Delta G_{TOTAL} = \Delta G_{V} + \Delta G_{T} + 0.4 = \frac{1/27}{dB} \text{ Spec 1.4dB} \qquad ACC \qquad REJ$$

DATE ACC REJ

PART NO. <u>1331562- 116-</u>	SPACEK QA 4-2 <u>4-9</u> 7	A9
SER NO. <u>7AII</u>	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS NO.	
END DATE: 4-24-97		
END TIME: 1600	Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara,CA,93101	



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DASH#

		P2	OUTPUT	SPEC.
11 12 13 14 15 16 17 18 19 20	FREQ.	COMP	COMP.	COMP.
	(MHz)	(dBm)	at+10(dBm)	PT.(dBm) &CC~REJ
X X X X X X X X X	10	2.25	0.75	1.0 (5-)
X	20			
X X	50			
X X X X X X X X	100	2.30	0.70	1.0
X	150	2,25	0.75	1.0 (5-)
X X X X X X	200			
X	400			
X	5 00			
X	1000			
X	1500			

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4-20-97 AMBIENT ROOM TEMPERATURE °C: 23

AMPLIFIER	AMPLIFIER		
OUTPUT	OUTPUT		AMPLIFIER
POWER	POWER	Y FACTOR	NOISE
AMBIENT (dBm)	(-77 K)(dBm)	(dB)	FIGURE (dB)
	> -	·n 11	
722.3	~ 25.7	3.4	L36

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- [] F</u>	SPACEK QA 4-20-97 S-
SER NO	TEST FAILURE:
TESTED BY: 77	FAILURE ANALYSIS NO
END DATE: 4-20-97	
END TIME: 4:00 pm	Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara,CA,93101

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 1-5-98 AMBIENT ROOM TEMPERATURE °C: +22

UUT TEMP °C.	UUT CURRENT (MA)	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ĄCC	REJ
-6	43.3	-21,80	-23.60	1.80	3.45	3.5	OA .	
+8	43.4	-21.90	-23.70	1.80	3.45	3.5	0h	
+28	43.5	-22.20	-24.00	1.80	3.45	3.5	<u>J</u>	
+40	42,5	-22.40	- 24.15	1.75	3,55	3.5	(OF)
_		<i>O.</i> dB Sp	is, 3dB peak pec is .5dB peak h the Daden filt	to peak on	-20 هلک AC	C & ~)	REJ	· ·
NIT (T N	OTOP DOM	מיין איים איים	X COMP COM A COMP :	nin . an . m	YY # 4 A			

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

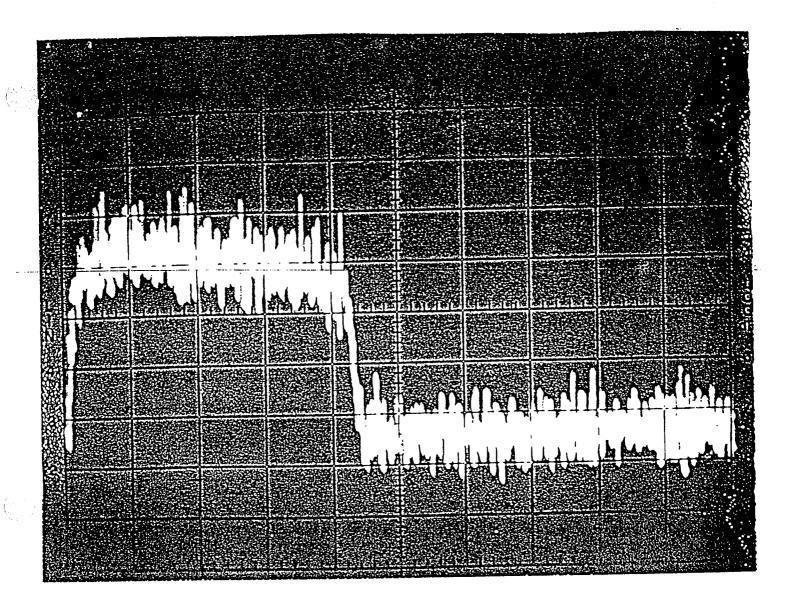
Date: 1-19-98 Ambient Room Temperature °C: 23

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.068

Record Nps(K)0.07 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

	ACC REJ	
PART NO. <u>1331562-</u> [I G	SPACEK QA 1-21-98 ACC REJ SDAR 98-000	23
SER NO. 7AII	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS NO	
END DATE: 1-19-98		
END TIME: 4:00 pm	Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara,CA,93101	e C



5.4.14 Noise Power Profile

Model No.: 1331562-/16

Serial No.: 7A11

Date: 1-21-98

Tested by: Db

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.
Scan Width: 30 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.



Channel 2 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-12, S/N: 7A02)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST: ATP PARAGRAPH 5.1.3

GAIN FLATNI (dB)ppK	ESS SPEC. GAIN (dB)ppK	FLATNESS	ACC QA 1	REJ		
GAIN VERSU	S VOLTAGE SENS	SITIVITY TE	ST: ATP	PARAGRAI	PH 5.1.	<u>4</u>
AMPLIFIER VOLTAGE	GAIN READING (dBm)	۸G/۸\/	SPEC.	٨٥٥	REJ	e.
10.04	70.65 70.60 70.50	1.87	2.0	QA —1	——	-
$\Delta G_{V} = $ _	6./5 dB			DATE	<u>ACC</u>	<u>REJ</u>
PART NO	. 1331562-12F	SPAC	EK QA	4-21-97	QA —1	
SER NO. 7AOZ TES			FAILURI	E:		_
TESTED I	BY: 971	FAILURE	ANALY	SIS NO		
END DAT	E: 4-21-97	_				
END TIMI	E: 77 4:007	/A/\	212 E. G	abs, Inc. utierrez St.		

Frequency (Mhz) 001 OZZ 051 Amplifier Gain (db) 1966 100.01 10.04 7.52+ Tested By STON Amplifier Gain L6-12-H Model No. 1331562-12F Serial No. 7A0Z

TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 70.50				
		* 0,015	0.035dB/°C	QA	
T2 +28	GT2 70,68			1	
		* 0,026	0.020dB/°C		QA
T3 + 8	GT3 71.20				1 1
		* 0,013	0.035dB/°C	QA	
T4 -6	GT4 71,38			1	<u> </u>

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \begin{array}{c} G_{Ti} - G_{Ti+1} \\ \\ ---- \\ T_i - T_{i \neq 1} \end{array} \qquad \qquad i = 1,2,3,4 \qquad \qquad \Delta G_T = \begin{array}{c} O \setminus 88 \\ -dB \end{array}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = 1.43$ dB Spec 1.4dB ACC REJ 1

DATE ACC REJ

PART NO. 1331562-12 F SPACEK QA 4-24-97 QA

SER NO. 740Z TEST FAILURE:

TESTED BY: FAILURE ANALYSIS NO.

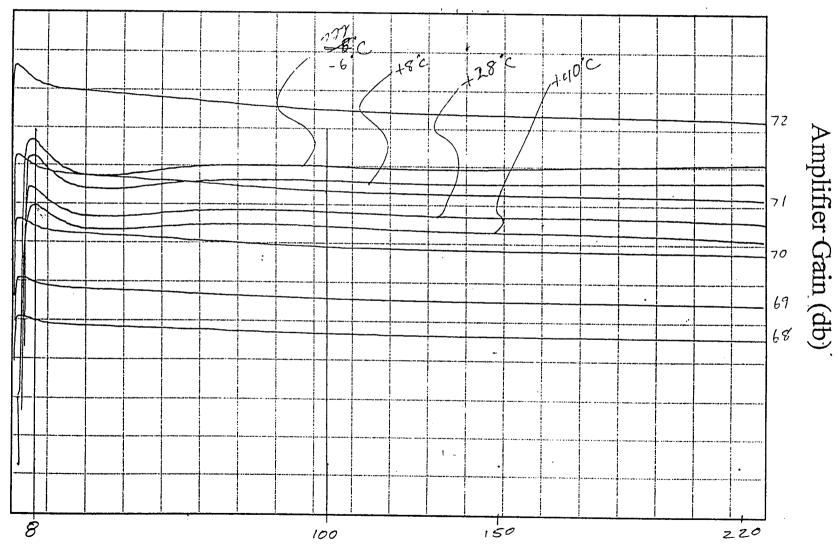
END DATE: 4-24-97

END TIME: 4:007M Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara, CA, 93101



Amplifier Gain

Amb Temp +23°c



01

TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

D	A	ST	Ŧ	#
12.	$\boldsymbol{\Box}$	ப	_	$\boldsymbol{\pi}$

		OUTPUT	SPEC.		
11 12 13 14 15 16 17 18 19 20	FREQ.	COMP.	COMP.		
	(MHz)	at+10(dBm)	PT.(dBm)	ACC	REJ
X X X X X X X X X X	10	0.7	1.0	1 W	
XX	50	0.6	1.0	0.40 1 1	*****
X X X X X X X X	100	016	1.0	₹ <u>-</u>	
X	150				
X X X X X X	200	_			
X	400				
X	500				
X	1000				
X	1500	-			

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4/20/37AMBIENT ROOM TEMPERATURE °C: 23

AMPLIFIER AMPLIFIER
OUTPUT OUTPUT
POWER POWER

AMPLIFIER

POWER POWER Y FACTOR NOISE AMBIENT (dBm) (-77 K)(dBm) (dB) FIGURE (dB)

<u>-24.0</u> <u>-27.7</u> <u>3.7</u> <u>1.1</u>

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

SER NO. 7AOZ TEST FAILURE: TESTED BY: 77 FAILURE ANALYSIS NO. END DATE: 4/20/97 END TIME: 4:00PM Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara, CA, 93101	PART NO. 1331562-(2F	CD A CETY O A	DATE ACC REJ
FAILURE ANALYSIS NO. END DATE: 4/20/97 Spacek Labs, Inc. 212 E. Gutierrez St.		SPACEK QA	4-2 <u>0-97</u> 5.
END DATE: 4/20/97 Spacek Labs, Inc. 212 E. Gutierrez St.	SER NO. 7AOZ	TEST FAILURE:	-
Spacek Labs, Inc. END TIME: $U: \bigcirc PM$ 212 E. Gutierrez St.	TESTED BY:	FAILURE ANALYS	IS NO
END TIME: $U: OOPM$ 212 E. Gutierrez St.	END DATE: $4/20/97$		
	END TIME: 4:00PM		

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

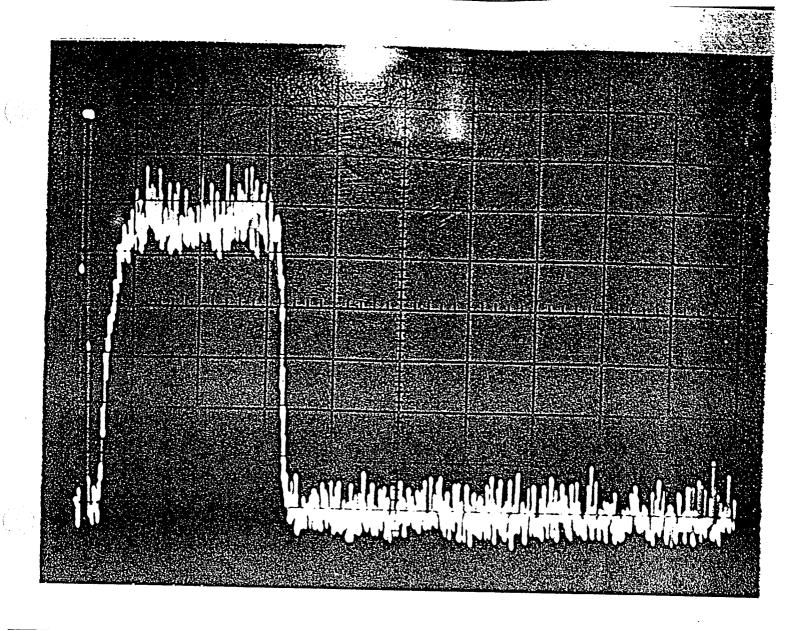
DATE: <u>7-2-9</u>7AMBIENT ROOM TEMPERATURE °C: +22

DATE:_	1-2-9/AIV	IDIENI KUUN	TIEWPERAT	URE C:	<u>ٽ</u>			
UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6_	43.0	-23.10	-25.15	2.05	3.0	3,2		
+8_	43.0	-23,30	-25,30	2.0	3.1	3,2	0,	
+28	43.1	-23.60	-25,60	2.0	3.1	3,2	1/2	
+40	43.2.	-23.80	- 25,80	2.0	3.1	3.2	- 1 - 1	
Noise figure change O. I dB Spec is .5dB peak to peak on -20 ACC REJ NOTE: Above data to be taken with the Daden filter, except on the -19 unit.								
NEΔT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9								
Date: 4-1-97 Ambient Room Temperature °C: + 25								
Attach c	Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.							

Record the calculated Nps(K) from spreadsheet data: 0.254

Record Nps(K) 0.07 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ
PART NO. <u>1331562- Z F</u>	SPACEK QA	DATE ACC REJ 7-2-97
SER NO	TEST FAILURE:	
TESTED BY: 04	FAILURE ANALYSIS	NO
END DATE:	Spacek Labs, 212 E. Gutier Santa Barbara	rez St.



5.4.14 Noise Power Profile

Model No.: 1331562-/2F

Serial No.: 7A02

Date: 7-3-97

Tested by: ()}

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width:

10 Khz

Scan Time:

3 sec/Div.

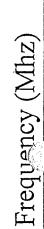
No video filter.

Channel 3 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-13, S/N: 7A03)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATN	VESS TEST: ATP PA	ARAGRAPH	<i>5.1.3</i>	
GAIN FLATN (dB)ppK	IESS SPEC. GAIN (dB)ppK	FLATNESS	ACC R	EJ
0.30	0.5		4 <u>0</u>	<u>. </u>
GAIN VERSU	IS VOLTAGE SENS	SITIVITY TI	EST: ATP P.	<u> 4RAGRAPH 5.1.4</u>
AMPLIFIER VOLTAGE	GAIN READING (dBm)	ΔG/ΔV	SPEC. ΔG/ΔV	ACC REJ
10,04 10,00 9.96 ΔGv =	70.68 70.60 70.48 0,2 dB	2.5	2.0	
				DATE ACC REJ
PART NO	O. <u>1331562-13 F</u>	SPA	CEK QA	9-4-97 QA
SER NO.	7A03		FAILURE:	j week
TESTED	BY:	FAILUR	E ANALYSI	S NO
	TE: <u>8-7-97</u> 1E: <u> 600</u>		Spacek Lal 212 E. Gut Santa Barb	-
	ı			-



Amplifier Gain (db)

Model No. 1331562-13 F
Serial No. 7803
Date 8-6-97
Tested By 774

Amplifier Gain

Amb Temp 23°C

100 8

TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 70,35			- men-	
		* ,019	0.035dB/°C /	OA	\
T2 +28	GT2 70,58			i ,	
			0.020dB/°C		OA.
T3 + 8	GT3 71,12			i	1
		.012	0.035dB/°C	OA	· -
T4 - 6	GT4 71,29			יער	

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}}$$

$$i = 1,2,3,4$$

$$\Delta G_T = \frac{0.94}{dB}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = \cancel{1.54} \text{ dB Spec 1.4dB}$ $ACC \qquad REJ \qquad 1$

PART NO. <u>1331562-13F</u> SPACEK QA 9-5-97 (QA)

SER NO. 7A03 TEST FAILURE:

TESTED BY: FAILURE ANALYSIS NO.

END DATE: <u>8-7-97</u>

END TIME: /600 Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara, CA, 93101

SPACEK LABS, INC. Amb Temp 24'C Amplifier Gain 100 160 +8°C ,+28°C 4.04 Model No.
Serial No.
Date
Tested By 1331562-13F 7A03 70 68 .72 69 Amplifier Gain (db)

Frequency (Mhz)

TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DASH#	ŧ	
-------	---	--

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC REI
X X X X X X X X	_ 10	-2,2	0.8	1,0	-8
X	20				
X X	50	-2.5	0.5	1.0	
X X X X X X X X X	_ 100	-2,6	0.4	1.0	4 5-
X	150				
X X X X X X	200				
X	400		••••		
X	500				
X	1000				
X	1500				

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 8-7-97 AMBIENT ROOM TEMPERATURE °C: 21

AMPLIFIER
OUTPUT
OUTPUT
POWER
OWER
AMBIENT (dBm)
-24.2
-27.8
AMPLIFIER
AMPLIFIER
OUTPUT
(dBm)
AMPLIFIER
AMPLIFIER
OUTPUT
(dBm)
FIGURE (dB)

7.2

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- 13 F</u>	SPACEK QA	DATE ACC REJ
SER NO. <u>7A03</u>	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	NO
END DATE: 8-7-97		
END TIME: 1:30pm	Spacek Labs, 1 212 E. Gutier Santa Barbara	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: $\sqrt{3l-9}$ AMBIENT ROOM TEMPERATURE °C: +21

UUT TEMP °C.	UUT CURRENT (MÅ)	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.9	-22,90	-24.65	1.75	3.5	3.8	(<u>~g</u>	<u> </u>
+8	44.0	-23,00	-24.75	1.7.5	3.5	3.8	2	•
+28	44.0	-23.15	-24.40	475	_3.5	3.8.	(<u>-8</u>)	
+40	44.1	-23.30	-25.05	1.75	3.5	3.8	mB)	:
_	gure change_ Above data t	dB Sports db	ec is .5dB peak the Daden filte			CC (-8)	REJ	····

NEΔT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

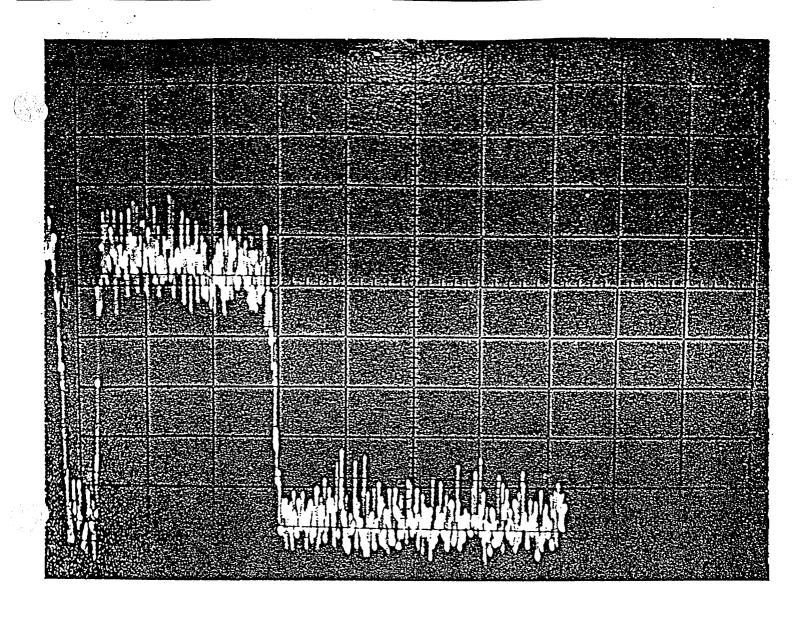
Date: 9/8/97 Ambient Room Temperature °C: 25

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0,263

Record Nps(K) 0.08 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ
PART NO. <u>1331562- /3</u> F	SPACEK QA	9-10-97 S
SER NO	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSI	S NO
END DATE: 9/8/97		
END TIME:	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.



5.4.14 Noise Power Profile

Model No.: 1331562-/3F

Serial No.: 7A03

Date: 9-10-97
Tested by: 1

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.



Channel 4 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-14, S/N: 7A04)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST:	ATP PARAGRAPH 5.1.3
	7111 171101010111111101

GAIN FLATNESS

SPEC. GAIN FLATNESS

(dB)ppK

(dB)ppK

0.37

0.5

GAIN VERSUS VOLTAGE SENSITIVITY TEST: ATP PARAGRAPH 5.1.4

 $\Delta G/\Delta V$

3.12

AMPLIFIER

GAIN

READING (dBm) VOLTAGE

SPEC. ΔG/ΔV

ACC REJ

10.04 10,00 71.00

70,90

70.75

2.0

DATE ACC REJ

PART NO. 1331562- 14F

SPACEK QA

SER NO. 7A04

TEST FAILURE:

TESTED BY:

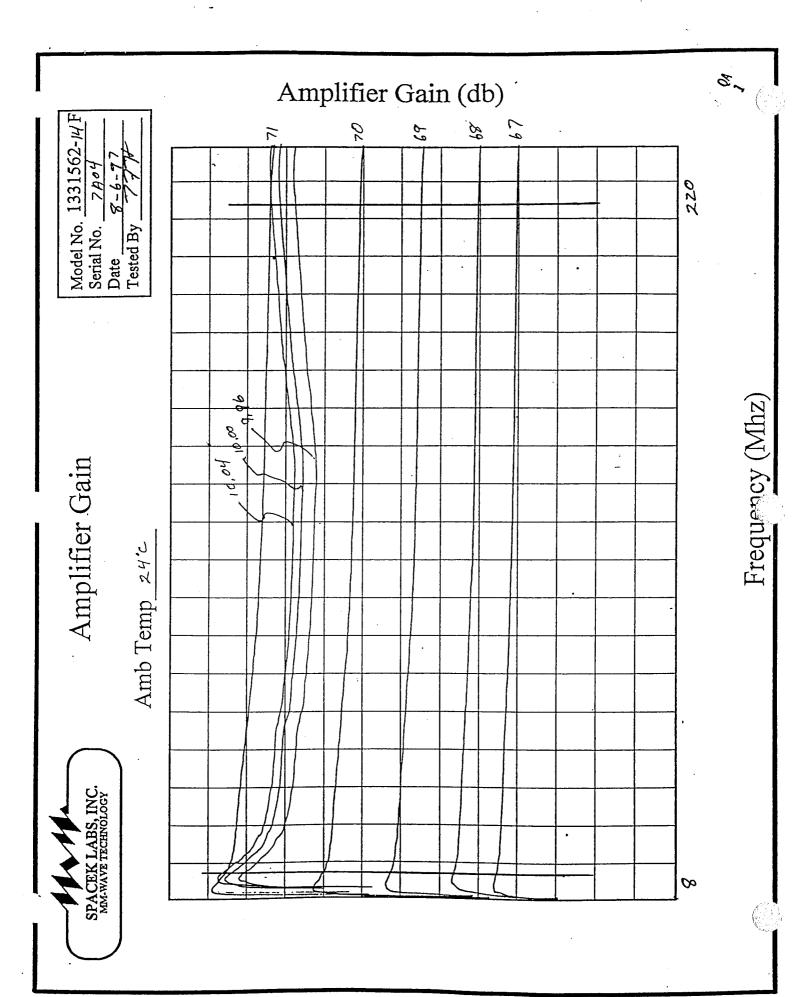
FAILURE ANALYSIS NO.

END DATE: 8-7-97

END TIME: 1600

Spacek Labs, Inc. 212 E. Gutierrez St.

Santa Barbara, CA, 93101



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 70.57				
		* .024	0.035dB/°C	OF	
T2 +28	GT2 70.86			1	<u>/</u>
		* .030	0.020dB/°C	11 22 - 1	AO
T3 + 8	GT3 71,45				1
		* .024	0.035dB/°C	OA	
T4 - 6	GT4 71,79			1	.].

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}}$$

$$\Delta G_{TOTAL} = \Delta G_{V} + \Delta G_{T} + 0.4 = \cancel{\cancel{87}} dB \text{ Spec } 1.4dB \qquad ACC \qquad REJ$$

PART NO. 1331562-14 F SPACEK QA 9-5-97 1

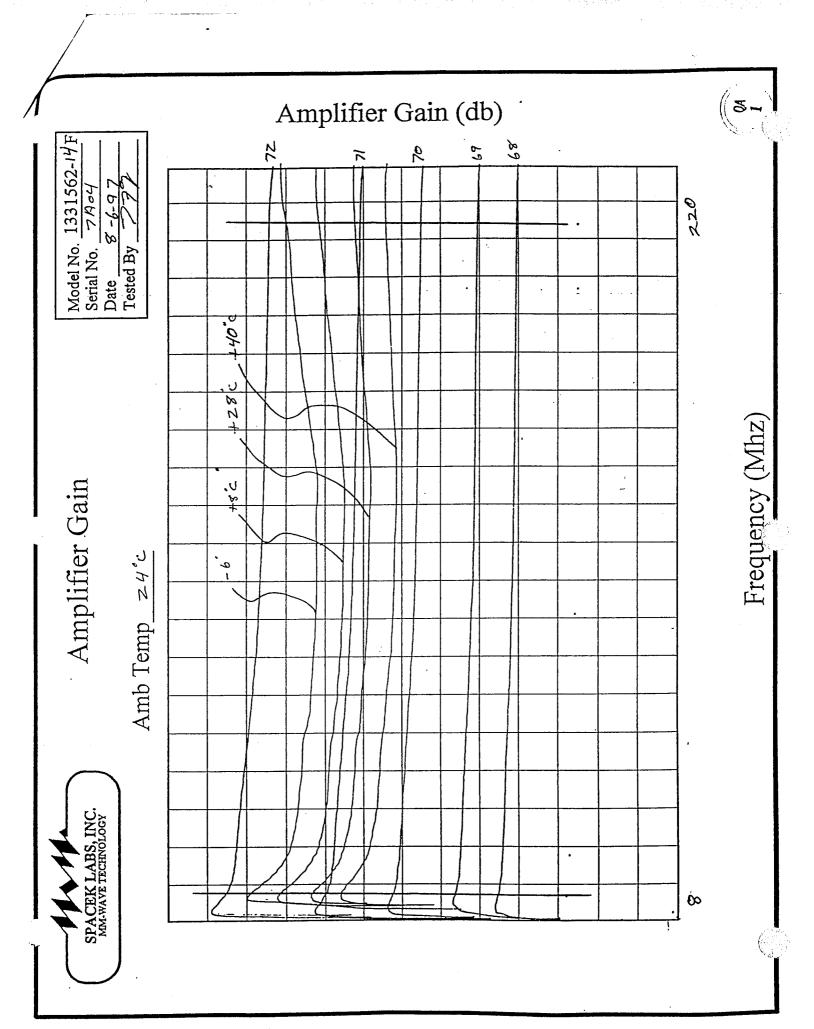
SER NO. 7A04 TEST FAILURE:

TESTED BY: 77 FAILURE ANALYSIS NO.

TESTED BY: FAILURE ANALYSIS NO.

END DATE: 8-7-97
Spacek Labs, Inc.

END TIME: 1600 212 E. Gutierrez St.
Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DASH#

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm) ACC REJ
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	10 20	<u>-2.3</u>	0.7	1.0 5-
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	50 100	-2.6	0.4	7.0 (5-
X	150 200	- 2.5	0.5	1.0
X X X	400 500			
X	1000 1500			

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 8-7-97 AMBIENT ROOM TEMPERATURE °C: 2/

AMPLIFIER
OUTPUT
OUTPUT
OUTPUT
POWER
AMPLIFIER
OUTPUT
AMPLIFIER
Y FACTOR
NOISE
AMBIENT (dBm) (-77 K)(dBm) (dB)
FIGURE (dB)

Above data taken with Daden filter attached (except -19) .

Intermediate test results for information only

PART NO. <u>1331562- i 4 F</u>	SPACEK QA	B-8-97 S-
SER NO	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	3 NO
END DATE: 8-7-97		
END TIME: 1:30 pm	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 9-1-97 AMBIENT ROOM TEMPERATURE °C: 421

UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.7	-19.10	-21.15	2.05	3.0	3.8	3~	
<u>+8</u>	43.8	-19,30	-21.35	2.05	3.0	3.8	8-	
<u> +28</u>	43.9	-19.60	-21.60	2.0	3.1	3.8	8-	
440	440	-19.7	-21.70	710	3.1	3.8	8-	
Noise figure change O, / dB Spec is .5dB peak to peak on -20 ACC S- REJ NOTE: Above data to be taken with the Daden filter, except on the -19 unit.								

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

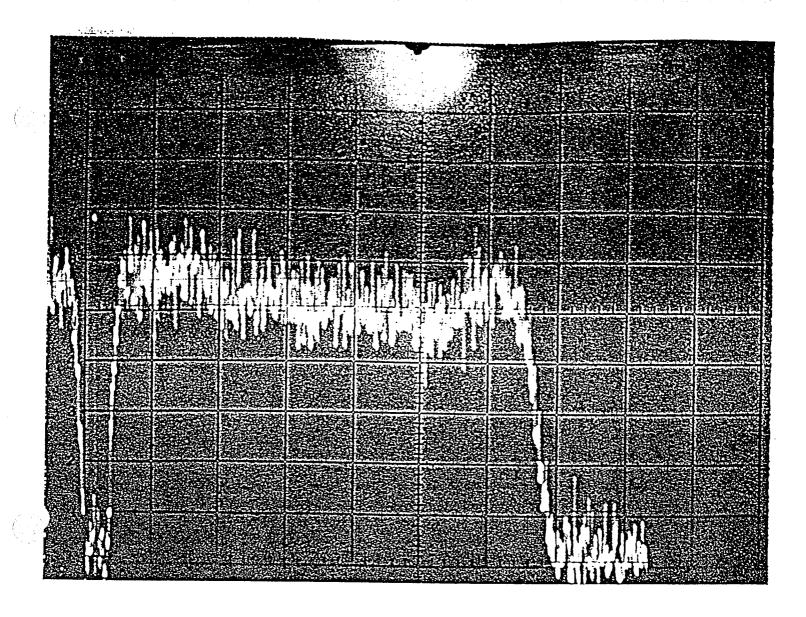
Date: 9-8-97 Ambient Room Temperature °C: 24

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.168

Record Nps(K) 0.08 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ
PART NO. <u>1331562-14F</u>	SPACEK QA	9-10-97 ACC REI
SER NO. 7A04	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	NO
END DATE: <u>9-8-97</u>		
END TIME:	Spacek Labs, 212 E. Gutier Santa Barbara	rez St.



5.4.14 Noise Power Profile

Model No.: 1331562-/4F

Serial No.: 7A04

Date: 9-10-97
Tested by:

Spectrum Analyzer Parameters

Vertical Scale:

2 dB/div.

Scan Width:

30 mhz/Div.

IF Band Width:

10 Khz

Scan Time:

3 sec/Div.

No video filter.



Channel 5 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-15, S/N: 7A05)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

5.1.4
<u>,,,,,</u>
EJ -
CC REJ
QA 1
•

Frequency (Mhz)

Amplifier Gain (db)

ain	
er Ga	
)lifi(

.]]	14.	202	89	
Date 8-6-77 Tested By 777				
	96.6			
	10.00			-
23°C	10:0b+			
Amb Temp 23°C				
) A				

TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature	Relative Gain	ΔG/ΔT	SPEC	ACC	REJ
T1 +40	GT1 70,70				
		• -0/3	0.035dB/°C	QA	1
T2 +28	GT2 70,86			1	1
		.026	0.020dB/°C	, T	QA
T3 +8	GT3 71.38				1
		* ,012	0.035dB/°C	QA `	
T4 -6	GT4 71, 55			1	

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}}$$

$$i = 1,2,3,4$$

$$\Delta G_T = \frac{0.85}{dB}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = \frac{1.51}{1.00} dB$ Spec 1.4dB.

DATE ACC REJ

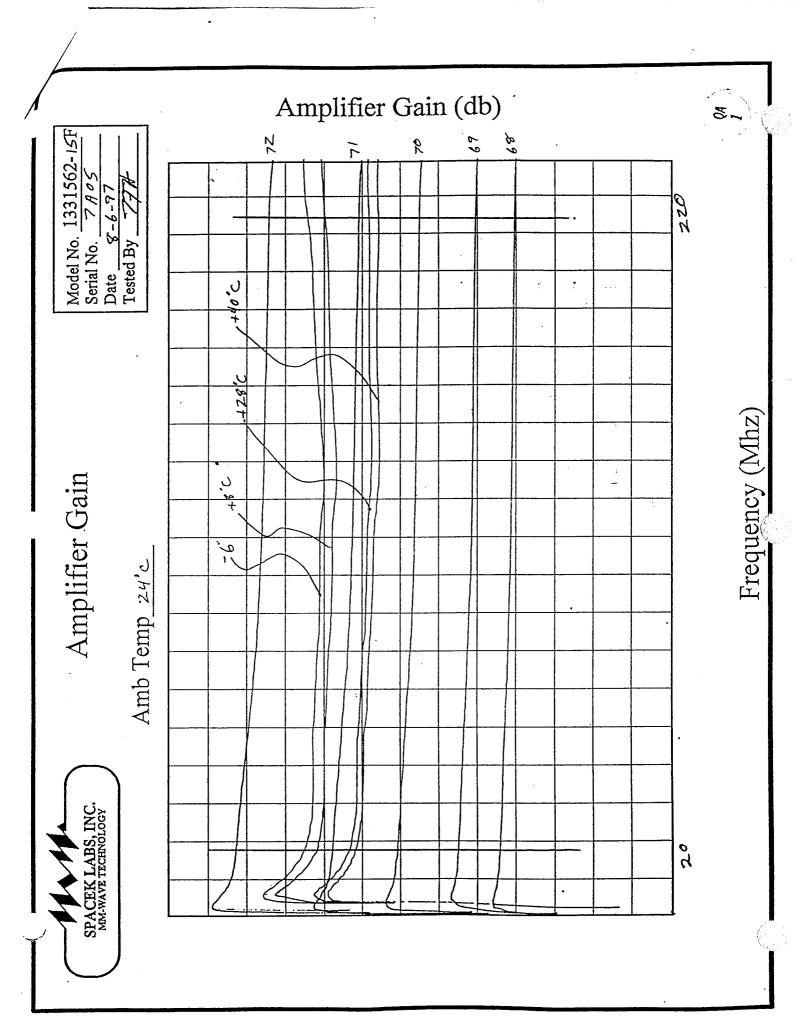
PART NO. <u>1331562-15F</u> SPACEK QA

SER NO. <u>7AOS</u> TEST FAILURE:

TESTED BY: FAILURE ANALYSIS NO. _____

END DATE: <u>8-7-97</u>

Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

n	Ā	SI	H	#

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	A€€\ REJ
X X X X X X X X	10	-2.3	0,7		8-)
X	. 20				
X X	50				=
X X X X X X X X	100	-2.6	0.4	1.0	8-
X	150				
X X X X X X	200	-2.3	0.7	1.0	8-
X	400				
X	500				
X	1000				
X	1500				

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: <u>9-7-97</u> AMBIENT ROOM TEMPERATURE °C: <u>21</u>

AMPLIFIER	AMPLIFIER		
OUTPUT POWER	OUTPUT POWER	X E A OTTOD	AMPLIFIER
AMBIENT (dBm)	(-77 K)(dBm)	Y FACTOR (dB)	NOISE FIGURE (dB)
-21.0	-24.6	3.6	1.18

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- i5 F</u>	SPACEK QA	DATE ACC REJ 8-8-97 (5-)
SER NO. <u>7405</u>	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	NO
END DATE: 8-7-97		
END TIME: 1:30 pm	Spacek Labs,] 212 E. Gutieri Santa Barbara	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 8-31-97 AMBIENT ROOM TEMPERATURE °C:	+21	
--	-----	--

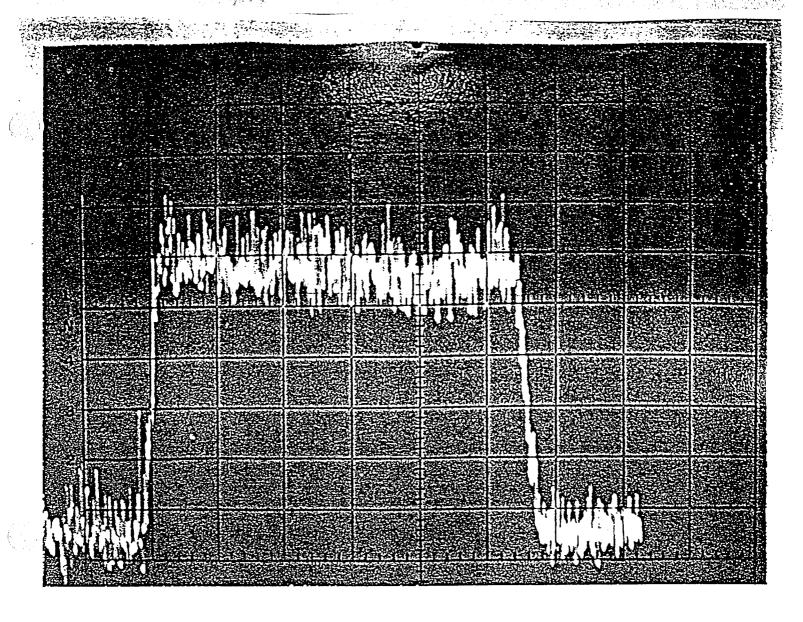
UUT TEMP °C.	UUT CURRENT (MA)	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.5	-19.60	-21.60	2.0	3.1	3.8	ar)	
+8	43.5	-19.70	-21.65	1.95	3.2	3.8	OF	
+28	43.7	-20,00	-21.95	1.95	3.2	3.8	01	
+40	43.8	-20,20	-22.15	1.95	3,2	3.8	40	
Noise figure change <u>(). 1</u> dB Spec is .5dB peak to peak on -20 ACC REJ_NOTE: Above data to be taken with the Daden filter, except on the -19 unit.								
ΝΕΔΤ-Ν	OISE POW	ER STABILITY	Y TEST: ATP I	PARAGRAPH	<u>5.4.9</u>	-		
Date: 8	<u>-5-97</u> Aml	oient Room Ten	nperature °C:_Z	5				

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.337

Record Nps(K) 0.08 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

	•	ACC REJ
		DATE ACC REL
PART NO. <u>1331562-15</u> F	SPACEK QA	9-10-97 - 5-
SER NO. 7A05	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSI	S NO
END DATE: 8-5-97		
END TIME: 1600	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.



5.4.14 Noise Power Profile

Model No.: 1331562-/5F

Serial No.: 7A05

Date: 9-10-97Tested by: 1

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.



Channel 6 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-16, S/N: 7A06)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

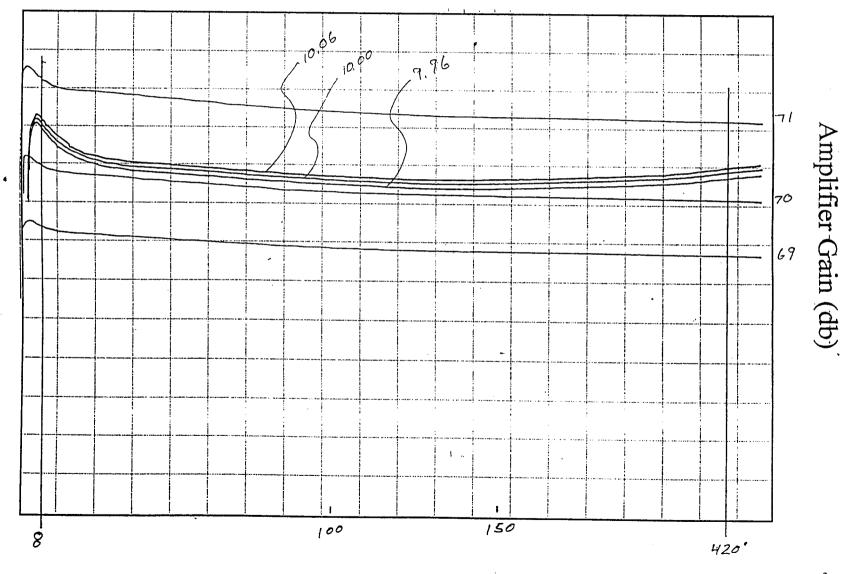
<u>GAIN FLATI</u>	NESS TEST: ATP PA	I <i>RAGRAPH</i>	<u>(5.1.3</u>	•		
GAIN FLATN (dB)ppK	IESS SPEC. GAIN (dB)ppK	FLATNESS	ACC · I	REJ		
0,28	0.5	•	49 1	 		
					,	٠
GAIN VERSU	IS VOLTAGE SENS	SITIVITY T	EST: ATP I	PARAGRAP	H 5.1.	<u>4</u>
AMPLIFIER	GAIN		SPEC.			2
VOLTAGE	READING (dBm)	ΔG/ΔV	ΔG/ΔV	ACC	REJ	-
10,06	70,41	1.5	2.0	\overline{J}	ę	
9.96	70,35 70,29					
ΔGv =	<u>0.12</u> dB			<u>DATE</u>	<u>ACC</u>	<u>REJ</u>
PART NO	O. <u>1331562- 6F</u>	SPA	CEK QA	4-2 <u>5-97</u>	19 1	
SER NO.	7A06	TEST	Γ FAILURE:			_
TESTED	BY: 77	FAILUR	E ANALYS	IS NO		_
END DA	TE: <u>4-25-97</u>					
	1E: 4:00PM		Spacek La 212 E. Gu Santa Bar	•	101	



Amplifier Gain

Model No. 1331562 -16F
Serial No. 7406
Date 4-25-97
Tested By 777

Amb Temp 232



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature	Relative Gain	ΔG/ΔT	SPEC	ACC	REJ
(°C)	0 1005				
11 +40	GT1 67-75	1 0 11 6	0.005 10.00	- 0.	
		* 0,025	0:035dB/°C	VA]
$\frac{12}{12} + 28$	GT2 70,25			4	
		* 0,030 ·	0.020dB/°C		QA
T3 + 8	GT3 70.85				1
		* 0.024	0.035dB/°C	QA	
T4 -6	GT4 71.18			1	

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \begin{array}{c} G_{Ti} - G_{Ti+1} \\ ---- & i = 1,2,3,4 \\ T_i - T_{i+1}^* \end{array} \qquad \Delta G_T = \begin{array}{c} 1/23 \\ ---$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = \frac{\cancel{75}}{100} dB$ Spec 1.4dB ACC_____

DATE ACC REJ

4-24-97 QA PART NO. <u>1331562-16F</u> SPACEK QA

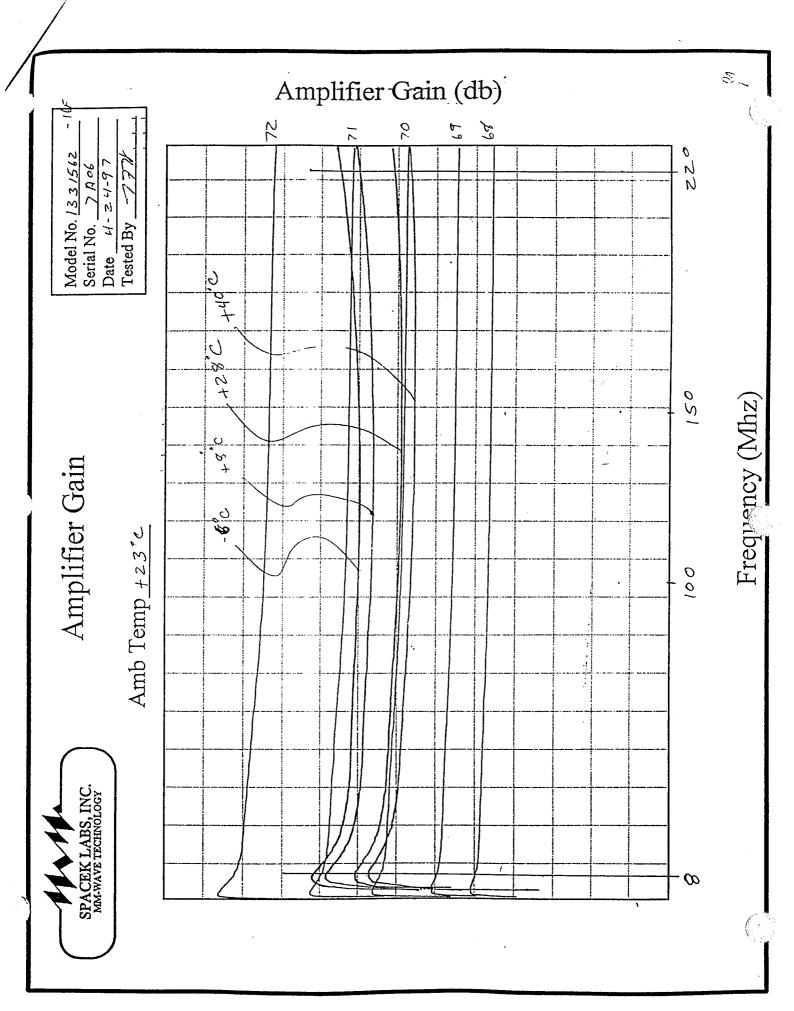
TEST FAILURE:

TESTED BY: _____ FAILURE ANALYSIS NO. _____

END DATE: <u>4-24-97</u>

Spacek Labs, Inc. END TIME: 4:00 pm 212 E. Gutierrez St.

Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

\mathbf{r}	•	a.	77	11
l)	А		Η	₩

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC	REJ
X X X X X X X X X X	10	0.6	1.0	5-	
X X	50	_			
$X \times X \times X \times X \times X$	100	0,5	1,0	<u> </u>	
X	150		-		
X X X X X X	_ 200	0.7	1.0	<u> </u>	
X	400	-			
X	500				
X	1000				*******
X	1500				

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4/20/97AMBIENT ROOM TEMPERATURE °C: +23

AMPLIFIER	AMPLIFIER		
OUTPUT	OUTPUT		AMPLIFIER
POWER	POWER	Y FACTOR	NOISE
AMBIENT (dBm)	(-77 K)(dBm)	(dB)	FIGURE (dB)
		_	
-70,6	-74 7	3.6	1.15

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- <i>16 F</i></u>	SPACEK QA	<u>Date acc rej</u> 4- <u>20-97</u> S
SER NO. <u>7A06</u>	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	S NO
END DATE: <u>4-20-97</u>		
END TIME: 4:00 pm	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 17-297AMBIENT ROOM TEMPERATURE °C:+ 22

UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ	
-6	43.4	-19.60	-21.65	2.05	3.0	3.8	01,		
48	43.5	-19.70	-21.70	2.0	3.1	3.8	9		
428	43.6	- 20,00	-22.00	2.0	3.1	3.8	Or)		
440	43.6	-20,40	-22,40	1.9	3.3	3.8	OF		
Noise figure change 0, 3 dB Spec is .5dB peak to peak on -20 ACC NOTE: Above data to be taken with the Daden filter, except on the -19 unit.									

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

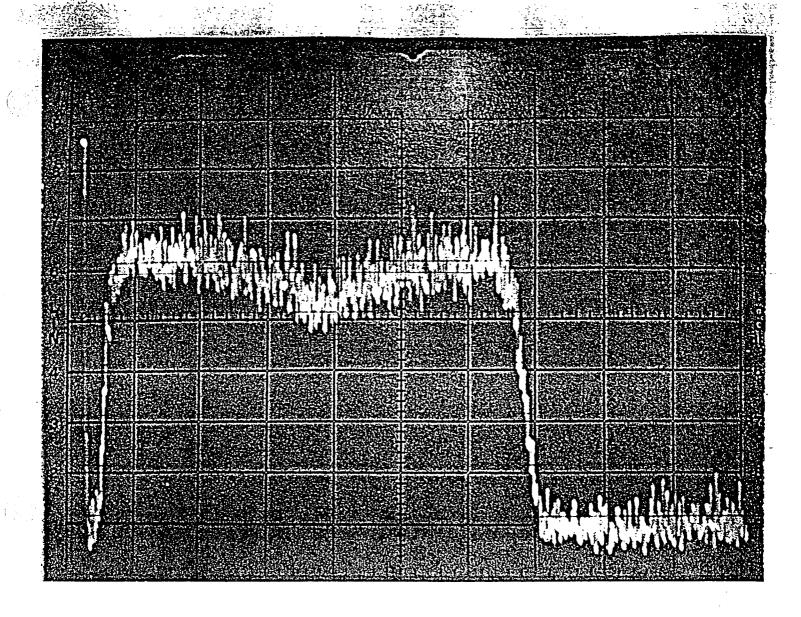
Date: 7-1-97 Ambient Room Temperature °C: +25

Attach computer generated $NE \triangle T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.203

Record Nps(K) 0.07 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

PART NO. <u>1331562-<i>16F</i></u>	SPACEK QA	7-2-87 ACC REJ
TESTED BY: $\frac{7406}{2}$	TEST FAILURE: FAILURE ANALYSI	S NO
END DATE: 7-2-97 END TIME: 1600	Spacek Labs, 212 E. Gutier Santa Barbar	rrez St.



5.4.14 Noise Power Profile

Model No.: 1331562-16F

Serial No.: 7,406
Date: 7-3-97

Tested by:

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

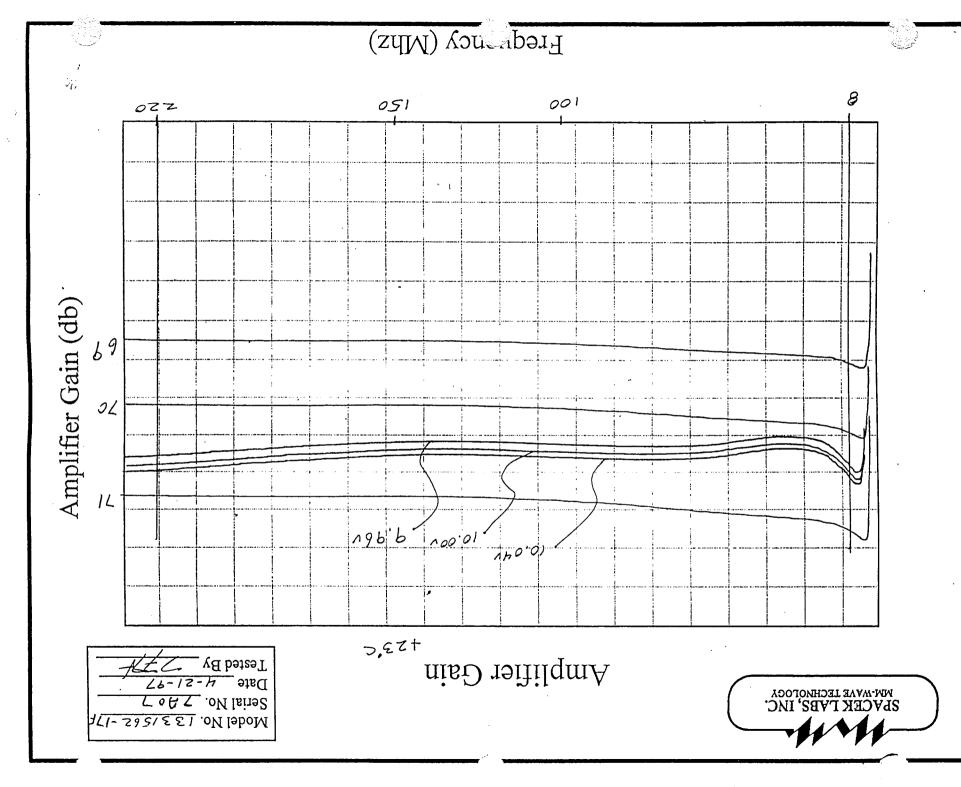
No video filter.

Channel 7 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-17, S/N: 7A07)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATI	VESS TEST: ATP PA	<u>ARAGRAPH</u>	H 5.1.3			
GAIN FLATN (dB)ppK 	(dB)ppK			REJ		
<u>GAIN VERSU</u>	US VOLTAGE SENS	SITIVITY T	EST: ATP	<u>PARAGRAF</u>	PH 5.1.	<u>4</u>
AMPLIFIER	GAIN	CUST	SPEC.	4.00	70.17.1	
VOLTAGE	READING (dBm)	ΔG/ΔV	ΔG/ΔV	ACC QA	REJ	
10,04 10,00 9,96 AGy =	70,71 70.65 70.55	<u>2.0</u>	2.0	1		
				DATE	<u>ACC</u>	<u>REJ</u>
PART N	0. <u>1331562-<i>17F</i></u>	. SPA	ACEK QA	4-21-97	QA 1	
SER NO	. <u>7</u> AD7		T FAILURE			
TESTED	2-5	FAILUF	RE ANALYS	SIS NO		_
END DA	TE: 4-21-97	_				
	ME: 4:00 PM			abs, Inc. itierrez St. rhara.CA.93	 1101	



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	ΔG/ΔT	SPEC	ACC	REJ
T1 + 40	GT1 70,45				
		* 0,021	0.035dB/°C	QA	
T2 + 28	GT2 70,70			1	
		* 0.030	0.020dB/°C		40
T3 +8	GT3 71.30				1
		* 0.018	0.035dB/°C	AQ	
T4 - 6	GT4 71.55			1	ł

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \begin{array}{ccc} G_{Ti} - G_{Ti+1} & & \\ \Delta G/\Delta T = & & \\ T_i - T_{it1} & & \\ \end{array} \qquad \qquad \qquad \qquad \qquad \qquad \Delta G_T = \begin{array}{ccc} 1/10 & \\ \Delta G & \\ \end{array}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = 1.66 \text{ dB Spec } 1.4 \text{dB} \qquad ACC \qquad REJ \qquad 1$

DATE ACC REJ

PART NO. 1331562-17F SPACEK QA 4-24-97 1

SER NO. 7A07 TEST FAILURE:

TESTED BY: ______ FAILURE ANALYSIS NO. _____

END DATE: 4-24-97

END TIME: 4:00Pm Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara, CA, 93101

Model No. 1331562-17
Serial No. 1991567

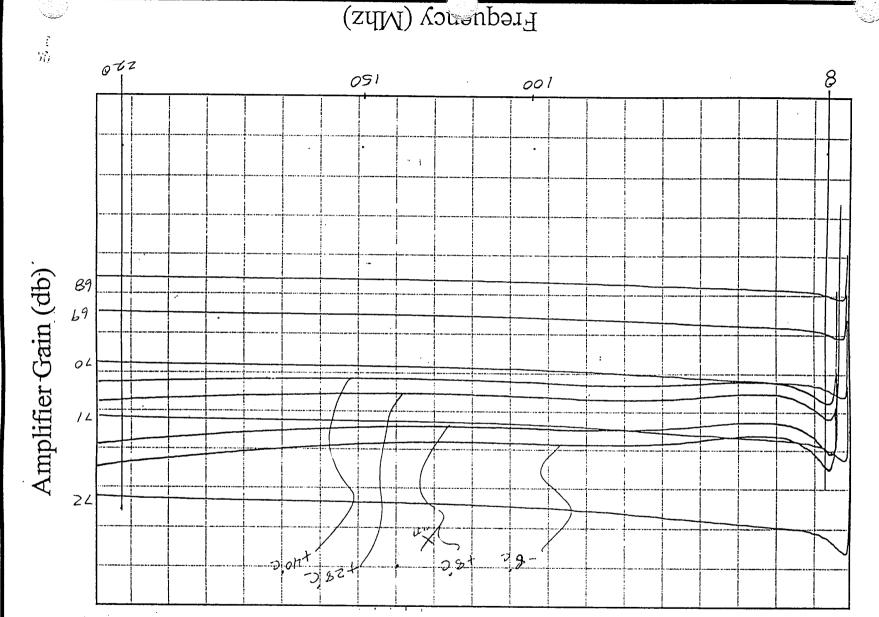
Date H-24-77

Tested By 78-19

Amplifier Gain

SPACEK LABS, INC.

Amb Temp +23'c



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

~		~		
1)	Λ	V.	ы.	++
1,	\boldsymbol{a}	L)	L	m

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC	REJ
X X X X X X X X X X	10	0.70	1.0	\$ -	
X X	50				
X X X X X X X X	100	. 0.55	1.0	4	
X	150		_		
X X X X X X	200	0.60	1.0	₩. T	
X	400				
X	500	-	~		
X	1000				
X	1500			************	

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4-20-97 AMBIENT ROOM TEMPERATURE °C: + 23

AMPLIFIER OUTPUT POWER AMBIENT (dBm)	AMPLIFIER OUTPUT POWER (-77 K)(dBm)	Y FACTOR (dB)	AMPLIFIER NOISE FIGURE (dB)
-20,1	- 23,7		1,17

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562-17 F</u>	SPACEK QA	DATE ACC REJ
SER NO	TEST FAILURE	
TESTED BY:	FAILURE ANALYS	IS NO
END DATE: 4-24-97	Spacek Labs	s Tne
END TIME: 4:00 Pm	212 E. Gutio	-

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 7-3-97AMBIENT ROOM TEMPERATURE °C: +22

UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	42.8	-19.50	-21.86	2,30	2.6	3.8	QA 1	
+8	41.9	-19.60	-21.85	2,25	2.7	3.8	T An	
+28	43.0	-19.80	-22.00	2.20	2.8	3.8	1	
+40	43.1	-20,40	-22.60	2.20	2.8	3.8	1	
Noise fig	gure change_	<u>O, Z</u> dB Sp	ec is .5dB peak	to peak on -20	À	$\mathcal{L}\left(\begin{array}{c} \mathbf{Q}_{\mathbf{I}} \\ \mathbf{Q}_{\mathbf{I}} \end{array}\right)$	REJ	·

Noise figure change <u>O, 2</u> dB Spec is .5dB peak to peak on -20 A NOTE: Above data to be taken with the Daden filter, except on the -19 unit.

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

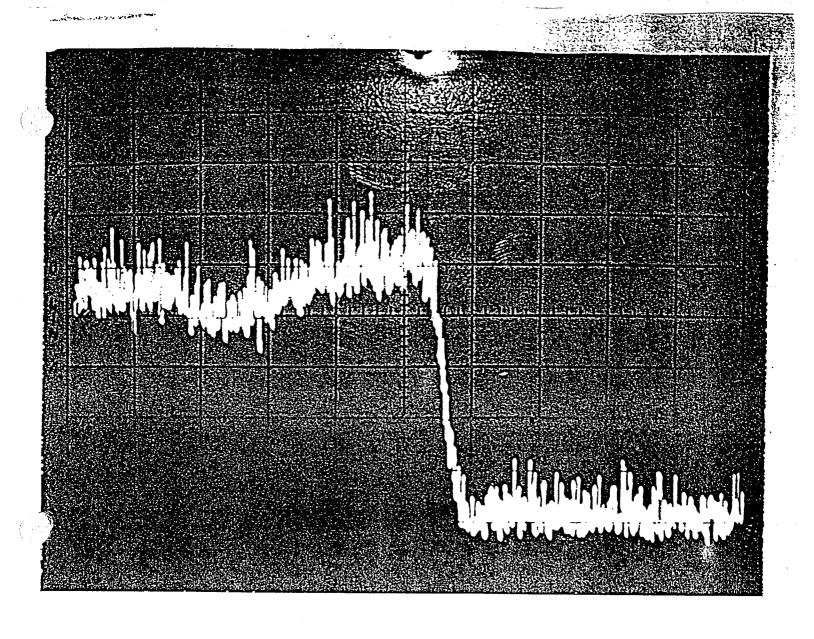
Date: 7-1-97 Ambient Room Temperature °C: 425

Attach computer generated $NE \triangle T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.167

Record Nps(K) O.O. for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ
DADTE 1221500 175	CD A CETZ O A	DATE ACC REL
PART NO. <u>1331562-17</u> F	SPACEK QA	7-3-97(3-)
SER NO. 7A07	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSI	S NO
END DATE: <u>7-3-97</u>		
END TIME:	Spacek Labs 212 E. Gutie Santa Barba	rrez St.



5.4.14 Noise Power Profile

Model No.: 1331562-171=

Serial No.: 7A07

Date: 7-3-97Tested by: 402

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.

Channel 8 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-18, S/N: 7A08)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST: ATP PARAGRAPH 5.1.3

GAIN FLATNESS

SPEC. GAIN FLATNESS

(dB)ppK

(dB)ppK

0,26

0.5

GAIN VERSUS VOLTAGE SENSITIVITY TEST: ATP PARAGRAPH 5.1.4

AMPLIFIER

GAIN

VOLTAGE

READING (dBm)

SPEC. ΔG/ΔV

ACC

16.04

70.98

3.62

 $\Delta G/\Delta V$

2.0

70,88 70,69 $\Delta G_v =$

DATE ACC REJ

PART NO. 1331562-18F

SPACEK QA

SER NO. 7A08

TEST FAILURE:

TESTED BY:

FAILURE ANALYSIS NO.

END DATE: <u>8-7-97</u>

END TIME:

Spacek Labs, Inc.

212 E. Gutierrez St.

Santa Barbara, CA, 93101

Amplifier Gain (db)

Amplifier Gain

Amb Temp 23°C

562-18F		7	
133156	2408	8-9-8	del
Model No.	Serial No.	Date 8	Tested By_

1 1111		O W M M M M M M M M M M	- (7			,
7	20	69	89	19			
					_	-	2000
					-		- 1
-8						·	
8						-	
6.0			-				_
50.0							
							-
		11.					
		$\parallel - \parallel$			<u> </u>		- .
		-					_
					<u> </u>		
					•		
				1			+,
<u> </u>							

Frequency (Mhz)

TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature	Relative Gain	Δ G /ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 70.65				
		• ,017	0.035dB/°C /	OY	
T2 + 28	GT2 70,85			1	
		• ,022	0.020dB/°C		QA '
T3 + 8	GT3 71,28				1
		* ,015	0.035dB/°C	OF	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
T4 -6	GT4 71,49			1	

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}}$$

$$i = 1,2,3,4$$

$$\Delta G_T = 0.84$$

$$\Delta G_T = 0.84$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = \frac{1.53}{0.4} dB$ Spec 1.4dB ACC_

ACC____REJ_1

		DATE ACC REJ
PART NO. <u>1331562- 18 F</u>	SPACEK QA	
SER NO. <u>7A08</u>	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	NO
END DATE: 8-7-97	·	

END TIME: 1600

Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara, CA, 93101

Amplifier Gain (db) 22 7.07 Frequency (Mhz) 30 1.66 80

Model No. 1331562-18F

Serial No. 7A08

Date 8-6-77

Tested By 777

Amplifier Gain

Amb Temp 24'c

TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DASH#

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC REJ
X X X X X X X X X	10	<u>-2.3 · </u>	0.7	1.0	(S- -
X	20			P	*
ХХ	50				
$X \times X \times X \times X \times X$	100	-2.6	<u>0.4</u>	1.0	<u> </u>
X	150				
X X X X X X	200	-2.3	0.7	1.0	8-
X	400				
X	500				
X	1000				
X	1500				

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: <u>8-7-97</u> AMBIENT ROOM TEMPERATURE °C: <u>21</u>

AMPLIFIER OUTPUT	AMPLIFIER OUTPUT		AMPLIFIER
POWER AMBIENT (dBm)	POWER (-77 K)(dBm)	Y FACTOR (dB)	NOISE FIGURE (dB)
-20,2	-23.8	3.6	1.18

Above data taken with Daden filter attached (except -19).

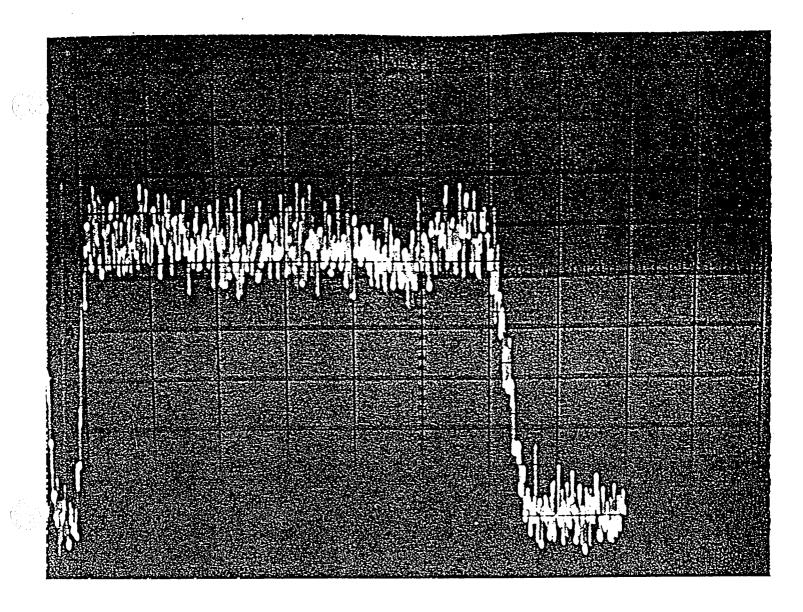
Intermediate test results for information only

PART NO. <u>1331562- 18 F</u>	SPACEK QA	BATE ACC REJ
SER NO. <u>7408</u>	TEST FAILURE:	<u> </u>
TESTED BY:	FAILURE ANALYSIS	S NO
END DATE: <u>8-7-97</u>	Consoli I oho	T
END TIME: 1:30 pm	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 8-31-97 AMBIENT ROOM TEMPERATURE °C: +21								
UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER-AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.5	-18.90	-21,00	2.10	2,90	3.8	<u>A. L</u>	
+8	43.5	-18,90	-20,95	2.05	3.0	3.8	8-	
+28	43.7	-19.20	-21,25	2.05	3.0	3.8	1 OA	
+40	43.8	-19.40	- 21,40	2.00	3.1	3.8		
Noise figure change 0.1 dB Spec is .5dB peak to peak on -20 ACC REJ NOTE: Above data to be taken with the Daden filter, except on the -19 unit.								
ΝΕΔΤ-Ν	NOISE POW	ER STABILIT	Y TEST: ATP 1	PARAGRAP)	H 5.4.9			
Date: <u>7</u>	-10-97 Aml	oient Room Ter	mperature °C:	25				
Attach o	computer gen	erated <i>NE</i> △ <i>T</i> s _j	preadsheet to th	nis test data sl	heet.			
Record	the calculated	l <u>Nps(K)</u> from	spreadsheet dat	a: 0,184				ā
Record Nps(K) O.O8 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.								
			•		ACC 1	S.	,	
1	PART NO. <u>1:</u>	331562-18 <i>F</i>	SPAC	CEK QA	<u>DATE</u> 19-10-97	ACC REL) ;	
\$	SER NO	7A08	TEST	r failure:		· • ·		
-	TESTED BY	: <u>77</u> }	FAILUR	E ANALYSI	S NO			
I	END DATE:	9-10-97						
]	END TIME:	1600		Spacek Labs, 212 E. Gutie Santa Barba				



5.4.14 Noise Power Profile

Model No.: 1331562-/8F

Serial No.: 7A08

Date: 9-10-17
Tested by:

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div. IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.



Channels 9-14 Mixer/Amplifier

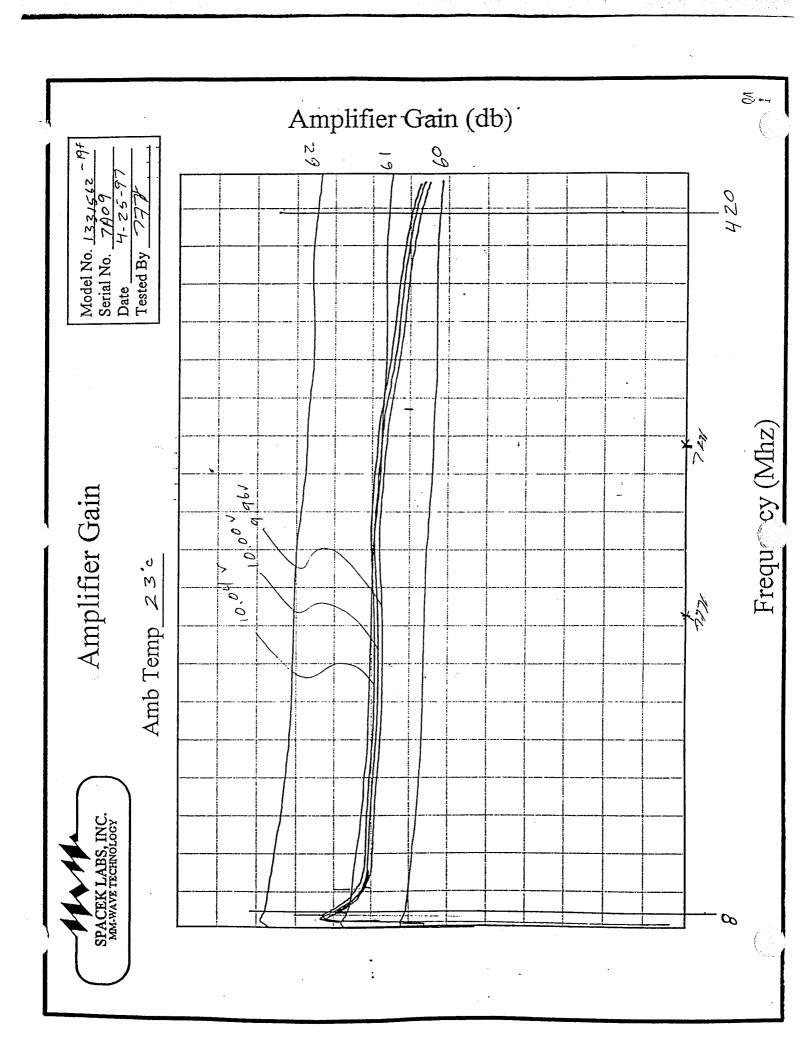
Mixer/Amplifier (P/N: 1331562-19, S/N: 7A09)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

			٠.	٠,	
GAIN FLATT	VESS TEST: ATP PA	<u>ARAGRAPH :</u>	<u>5.1.3</u>		
GAIN FLATN (dB)ppK	NESS SPEC. GAIN (dB)ppK	FLATNESS	ACC .:	REJ	
0.45	0.5	•	QA _1		
GAIN VERSI	US VOLTAGE SENS	SITIVITY TE	ST: ATP	PARAGRAF	PH 5 1 A
01111112100	,	,,,,,, <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	74. 7442 2	.711010,1011	11 3.1.7
AMPLIFIER VOLTAGE		ΔG/ΔV	SPEC. ΔG/ΔV	ACC	REJ -
	61.0	1,9	2.0	QA _1	
<u>9,96</u> ΔGv =	<u>60.85</u> .15 dB				
				DATE	ACC REJ
PART NO	O. <u>1331562-</u> <u>19 F</u>	. SPAC	EK QA	4-2 <u>5-97</u>	. <u>QA</u>
	7A09		FAILURE:		Pol-
TESTED	BY: 7	FAILURE	ANALYS	IS NO	
END DA	TE: <u>4-25-97</u>	. <u> </u>			
			Spacek La	bs, Inc.	•

212 E. Gutierrez St. Santa Barbara, CA, 93101

END TIME: 1610



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 59.65				
		* .046	0.035dB/°C		QA
T2 + 28	GT2 60. Z				1
		* 1048 ·	0.020dB/°C		QA
T3 + 8	GT3 61.15				1
		* ,025	0.035dB/°C	OA	
T4 - 6	GT4 61,5			ų, 1	

* Perform the following calculations and record on the TDS

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = 2.4 \text{ dB Spec 1.4dB} \qquad ACC \qquad REJ \qquad 1$

DATE ACC REJ

QA

PART NO. 1331562-19F SPACEK QA 5-5-97 1

SER NO. 7A09 TEST FAILURE:

TESTED BY: FAILURE ANALYSIS NO.

END DATE: 4-24-97

END TIME: 1600 Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara, CA, 93101

TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

D	٩S	H	#
-	$ \sim$	11	Ħ

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC REJ
X X X X X X X X X	10	0.7	1.0	78
X X	50			
$X \times X \times X \times X \times X$	100			
X	150			
<u> </u>	200	0.8	1,0	10A
X	400	1,3	1.0	W-1
X	500			
X	1000			
X	1500		. —	

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4-10-97 AMBIENT ROOM TEMPERATURE °C: + 23°C

AMPLIFIER	AMPLIFIER		
OUTPUT	OUTPUT		AMPLIFIER
POWER	POWER	Y FACTOR	NOISE
AMBIENT (dBm)	(-77 K)(dBm)	(dB)	FIGURE (dB)
-25.0	-28.3	3.3	1.43
			

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- 19 F</u>	SPACEK QA	DATE ACC REJ 5-5-97
SER NO. 7 A 0 9	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	3 NO
END DATE: 4-20-97		
END TIME: 1600	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 7-7-97AMBIENT ROOM TEMPERATURE °C: +2 2

		MIXER- AMP. OUTPUT	MIXER- AMP. OUTPUT	Y	MIXER- AMP	SPEC. MIXER- AMP.		
UUT TEMP	UUT	POWER (AMBIENT)	POWER (77 DEG K)	FACTOR :	NOISE FIGURE	NOISE FIGURE		
°C.	CURRENT	(dBm)	(dBm)	(dB)	(dB)	(dB)	ACC	REJ
-6	40.6	-24.10	-26.15	2.05	3.0	3.5	1	
<u> 78</u>	40.7	-24,30	- 26,30	2.0	3.1	3.5	QA OA	
+28	40,9	-24,80	-26.80	2.0	3.1	3.5	I OA	
+40	41.0	-25,40	-27.30	1.9	3.3	3.5		
Noise figure change O, J dB Spec is .5dB peak to peak on -20 ACC NOTE: Above data to be taken with the Daden filter, except on the -19 unit.								

NEΔT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

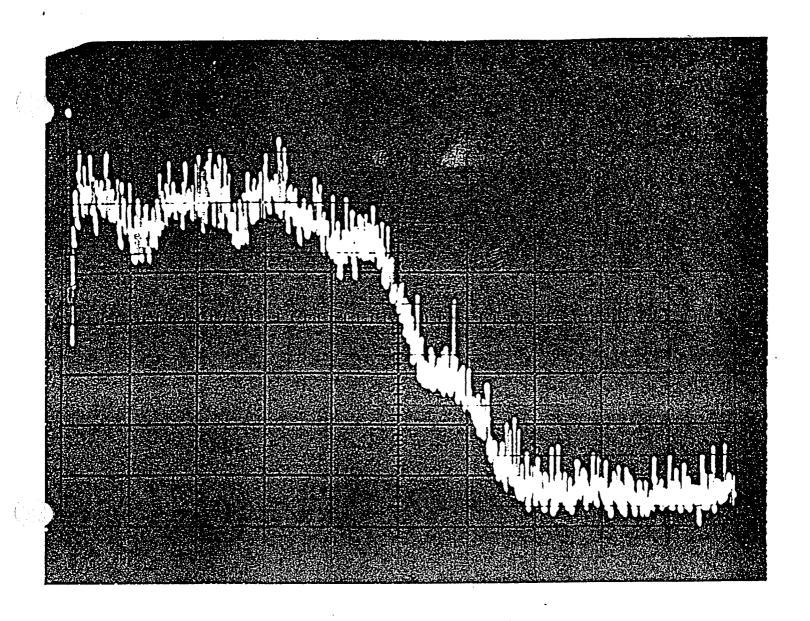
Date: 7-/-97 Ambient Room Temperature °C: +25

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.104

Record Nps(K) 0.07 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ	
PART NO. <u>1331562-19</u> F	SPACEK QA	DATE ACC REJ 7-3-97 - 3-0	
SER NO	TEST FAILURE:		
TESTED BY:	FAILURE ANALYSIS	S NO	
END DATE:			
END TIME: 1600	Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara,CA,93101		



5.4.14 Noise Power Profile

Model No.: 1331562-/9F

Serial No.: 7A09

Date: 7-3-97

Tested by: DA

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: /00 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.

Channel 9 Amplifier

IF Amplifier (P/N:1331579-8, S/N: 107)

APPENDIX C ATP1772 DATA SHEET MODEL NUMBER VD722301 AEROJET P/N 1331579-8

s/N_107

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.1.1	Examination of Product		Accept X			2-10-57
4.2.2	* Current Limiting	200 mA maximum Reg. VOLTAGE=	//\\\\\\ mA		-	<i></i>
4.4	Electrical Test					MA
4.4.1	* Polarity Reversal Protection	No Damage	Current ///A mA Accept ///A Reject		• •	
	Short Open Protection	No Damage	Accept X			2-10-97
	Output Coupling	Output shall be AC coupled	Accept X Reject			2-10-57
4.4.2	Gain vs. Freq. 5 MHz to 200 MHz	14.5dB Min., 15.5dB Max. -4°C to +40°C Attach x-y plot	Max 15,30 dB Min 15,12 dB Accept X Reject	Max 15.24 dB Min 15.05 dB Accept Reject	Max 15,35 dB Min 15,17 dB Accept x Reject	2-10-97
	Gain Flatness	.5 dB Maximum Worse Case	Accept X Reject 0.10 dB	Accept X Reject 0/19 dB	Accept X Reject	2-10-57
	Gain Temp. Sensitivity	±.22 dB from -4°C to +40°C Worse Case	Accept X Reject	Accept × Reject O-10 dB	Accept X Reject 0.07 dB	2.10.99
4.4.3	Gain-Voltage Sensitivity	<pre></pre>	0.01 dB 34.9 mA	0,02 dB 33.1 mA	002 dB 38.8 mA	
	Input Currents	40ma MAX. 8.4v Attach X-Y Plot	35.7 mA 36.2 mA Accept X Reject	33.6 mA 34.1 mA Accept X Reject	39, mA 37,5 mA Accept X Reject	2-10-57
	+ mrcm pro-				-	'(

NOTE: * TEST REQUIRED ON PROTOFLIGHT UNIT ONLY

a	Amplica, Inc.					
	Newbury Park, CA 91320	SIZE	FSCM NO	•	IR	EV.
	DRAWN	Α	510	25	ATP1772	
	ISSUED	SCAL	E		SHEET 34 OF 38	

APPENDIX C ATP1772 DATA SHEET MODEL NUMBER VD722301 AEROJET P/N 1331579-8

s/n<u>107</u>

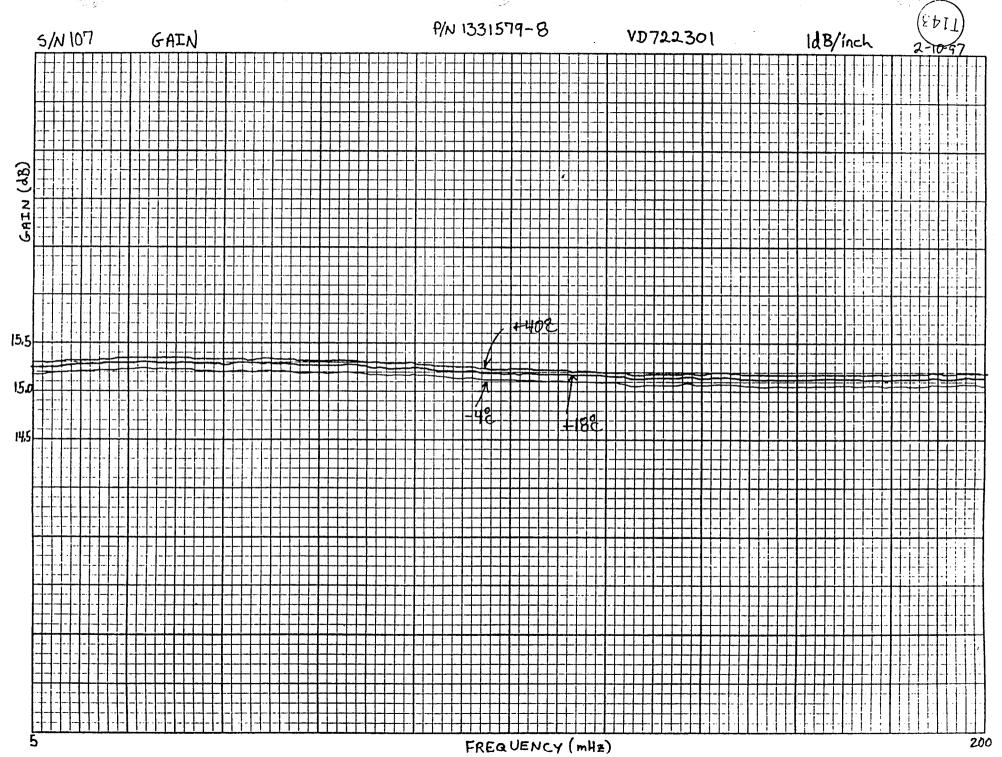
PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept X Reject		740-0	DATE
		5 MHz 102.5 MHz 200 MHz	0.35 dB 0.35 dB 0.25 dB	0,20 dB 0,20 dB 0,20 dB	0.20 dB 0.20 dB 0.25 dB	2-10-98
4.4.8	Stability	Stable with the input terminated into a 2.5:1 mismatch and the output at all impedance's.	Accept X Reject			2-10-57
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 45 mA	Accept_X Reject			
		Maximum Current	9 <u>6 3975 m</u> a 3	7.5		210.97

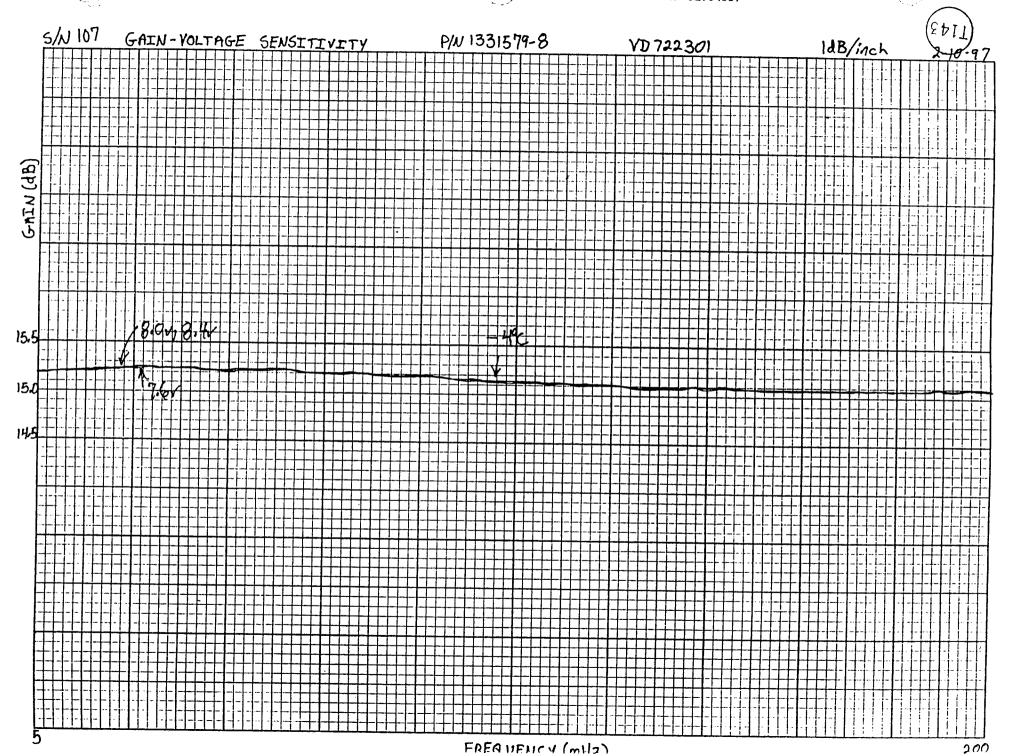
NOTE: Review all recorded data and signify acceptance below.

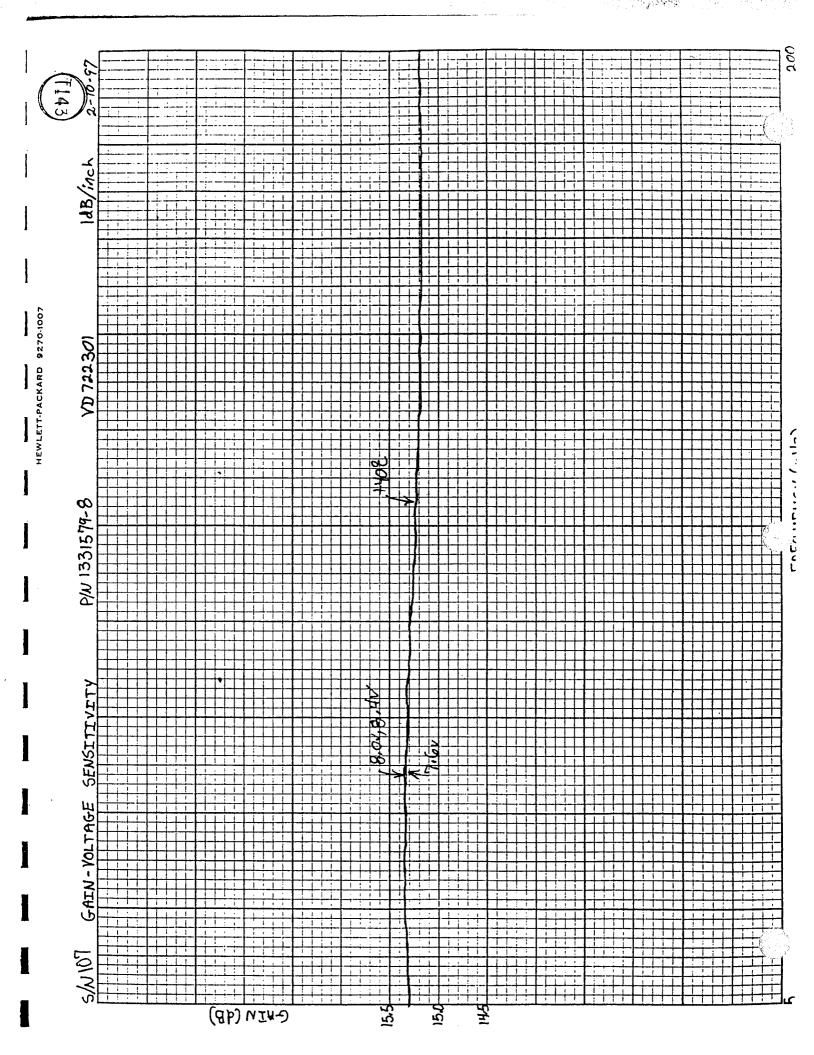
514-11 $(C+7)$	
Technician Stoffman (EDII)	Date: 2-10-97
Quality Assurance the funa 34	Date: 2-18-97
CSI: 176	Date: 2-19-97
GSI: Marjorie Thomas	Date: 2-10-97

® Amplica,Inc.					(زن
	Newbury Park, CA 91320	SIZE	FSCM NO	·.		REV.
	DRAWN	Α	510	25	ATP1772	
	ISSUED	SCAL	E		SHEET 36 OF 38	

FORM 150







Channel 10 Amplifier

IF Amplifier (P/N:1331579-9, S/N: 107)

APPENDIX C ATP1773 DATA SHEET MODEL NUMBER VD622301 AEROJET P/N 1331579-9

s/N 107

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.1.1	Examination of Product		Accept X Reject			<u>2·7·</u> 97
4.2.2	* Current Limiting	200 mA maximum Reg. VOLTAGE= N/A VDC Total R= N/A ohm max. current draw =	<u>N/A_</u> ma			NA
4.4	Electrical Test					
4.4.1	* Polarity Reversal Protection	No Damage	Current N/A mA Accept N/A Reject			NA
	Short Open Protection	No Damage	Accept X Reject			2.7-97
	Output Coupling	Output shall be AC coupled	Accept X Reject			2.7.97
4.4.2	Gain vs. Freq. 150 MHz to 300 MHz	17.5dB Min., 18.5dB Max. -4°C to +40°C Attach x-y plot	Max 18.05 dB Min 17.87 dB Accept X Reject	Max 17.99 dB Min 17.83 dB Accept × Reject	Max 18.09 dB Min 17.83 dB Accept X Reject	2-7-
	Gain Flatness	.5 dB Maximum Worse Case	Accept X Reject O,18 dB	Accept X Reject Oilo dB	Accept X Reject dB	2-7-17
	Gain Temp. Sensitivity	+.22 dB from -4°C to +40°C Worse Case	Accept_X_ Reject	Accept x Reject O.10 dB	Accept_X Reject	2.7.57
4.4.3	Sensitivity	<pre><.5dB/v Worse Case</pre>	0] dB 34.4 mA 35.1 mA		01 dB 36.8 mA 37.5 mA	
	Input Currents	40ma MAX. 8.4v Attach X-Y Plot	35.7 mA Accept × Reject	32.8 mA Accept X Reject	38./ mA Accept × Reject	2-747

NOTE: * TEST REQUIRED ON PROTOFLIGHT UNIT ONLY

®Amplica, Inc.				
Newbury Park, CA 91320	SIZE	FSCM NO		REV
DRAWN	Α	510	25	ATP1773
ISSUED	SCAL	.E		SHEET 34 OF 38

APPENDIX C ATP1773 DATA SHEET MODEL NUMBER VD622301 AEROJET P/N 1331579-9

s/N<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C		
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power 150 MHz	Accept X Reject	0,20 dB	+40°C	DATE
4.4.8	GL - 1 1 1 1	225 MHz 300 MHz	0,35 db 0,25 db	0.20 dB 0,25 dB	0.25 dB 0.30 dB	2-7-97
4.4.8	Stability	Stable with the input terminated into a 2.5:1 mismatch and the output at all impedance's.	Accept X			2-7-97
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 45 mA	Accept_X Reject			
		Maximum Current	39,0 _{mA}			<u>2-10-</u> 57

NOTE: Review all recorded data and signify acceptance below.

Technician Shoff (\$11)	Date: <u>2-10</u> -97
	Date: 2-18-9)
CSI: 176 (176) (176)	Date: 2-19-97
GSI: Mayorie Shoms	Date: 2-10-97

Amplica, Inc.					
Newbury Park, CA 91320	SIZE	FSCM NO		IR	EV.
DRAWN	A	510	25	ATP1773	
ISSUED	SCAL	SCALE		SHEET 36 OF 38	

10PM 153

30D 120 521 304 581 b-6191881 N/d TECH 34 (1143) ARTE 2-1-57

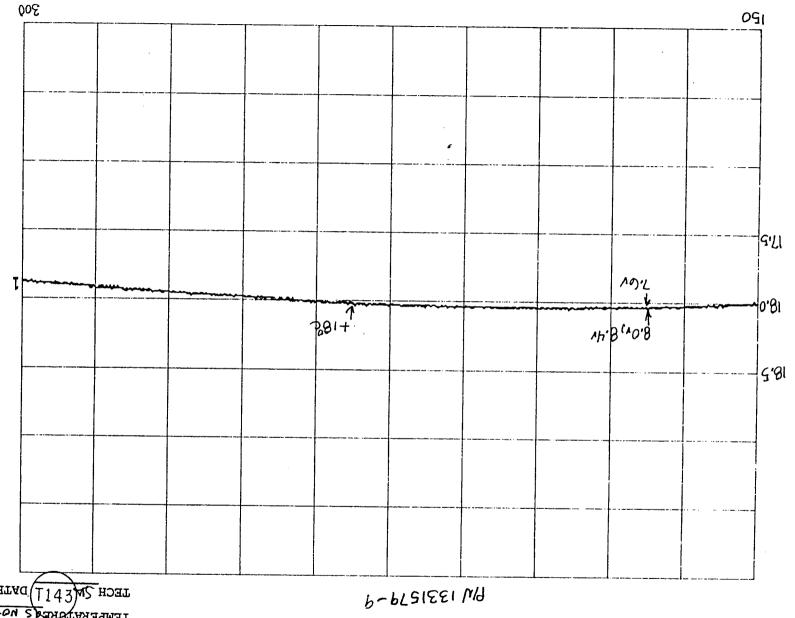
TEMPERATURE AS NOTED DEG.C.

WODER AD \$2301 S/N 107

CYIN AR EKEĞNENCK

VERTICAL CALIBRATION . 5 dB INCH

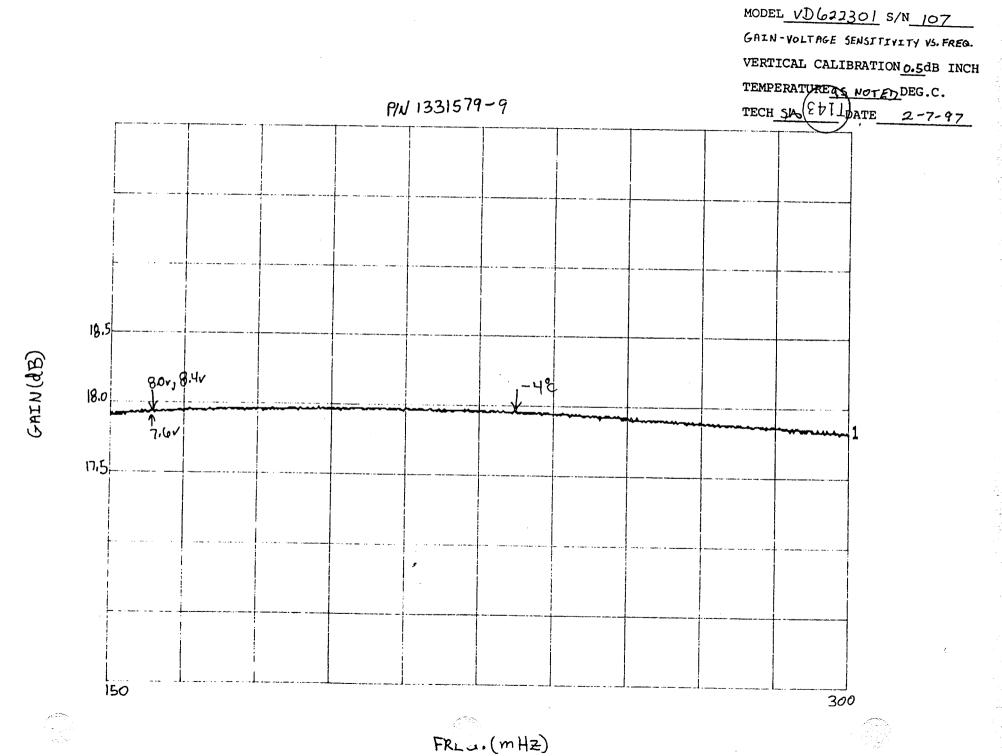
(SHM). CHA7

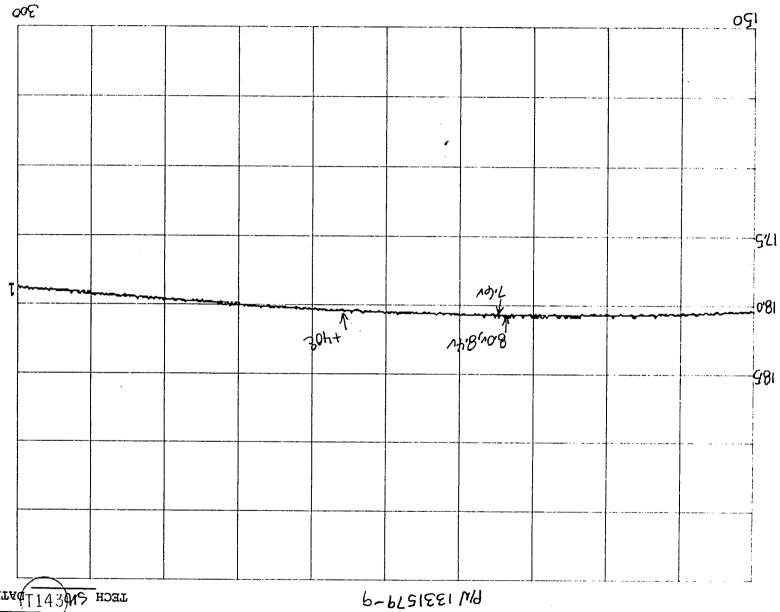


MODEL VD 62230/ S/N 107

CAIN-VOLTAGE SENSITIVITY VS. FREG.
TEMPERATURES SENSITIVITY VS. FREG.
TEMPERATURES SENSITIVITY VS. FREG.
TECH SUC \$\frac{1}{2}\$ POTED DEG. C.

GAIN (&B)





TECH SNE PILDATE 2-7-97 TEMPERATUREAS NOTED DEG.C. VERTICAL CALIBRATION 0.5dB INCH GRIN-VOLTAGE SENSITIVITY VS. FREG.

WODER ND 695301 S/N 107

Channels 11-14 Amplifier

IF Amplifier (P/N:1331579-7, S/N: 107)

APPENDIX C ATP1771 DATA SHEET MODEL NUMBER UD122301 AEROJET P/N 1331579-7

s/n<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.1.1	Examination of Product		Accept X Reject			2-7-97
4.2.2	* Current Limiting	200 mA maximum Reg. VOLTAGE=	_M/AmA			
4.4	Electrical Test					2-7-57
4.4.1	* Polarity Reversal Protection	No Damage	CurrentNAmA Accept_NA			
	Short Open	No Damage	Reject			2-7-97
	Protection	-	Accept_x Reject		:	2-7-57
	Output Coupling	Output shall be AC coupled	Accept_X_ Reject			2-7-57
4.4.2	Gain vs. Freq. 255 MHz to 390 MHz	14.5dB Min., 15.5dB Max. -4°C to +40°C Attach x-y plot	Max 5.15 dB Min 4.7 dB Accept X Reject	Max 15.10 dB Min 4.67 dB Accept X Reject	Max 15,15 dB Min 14,67 dB Accept × Reject	2-7-57
	Gain Flatness	.5 dB Maximum Worse Case	Accept X Reject O.44 dB	Accept × Reject dB	Accept × Reject	2-7-57
	Gain Temp. Sensitivity	±.22 dB from -4°C to +40°C Worse Case	Accept / Reject	Accept X Reject dB	Accept X Reject	2-7-97
4.4.3	Gain-Voltage Sensitivity	<pre>≤.5dB/v Worse Case</pre>	0.01 dB 33,9 mA	0,01 dB	0.0) dB 36.7 mA	
	Input Currents	7.6 to 8.4 Vdc 8.0v 40ma MAX. 8.4v Attach X-Y Plot	34/6 mA 35,2 mA Accept X Reject	31,4 mA 31,7 mA Accept √ Reject	37.4 mA 38.0 mA Accept × Reject	2-7-97
NOTE:	t magm pro-	ON PROTOFLIGHT UNIT ONLY		-		=

Amplica, Inc.					
Newbury Park, CA 91320	SIZE	FSCM NO.			REV.
DRAWN	Α	5102	5	ATP1771	
 ISSUED	SCAL	E		SHEET 35 OF 39	<u></u>

APPENDIX C ATP1771 DATA SHEET MODEL NUMBER UD122301 AEROJET P/N 1331579-7

s/n 107

PARA	TEST	SPECIFICATION	+18°C			
4.4.7	Compression			-4°C	+40°C	DATE
		1 dB maximum Compression AT +10 dBm Output Power	Accept X Reject			
		255 MHz 322.5 MHz	0,20 dB		0.20 dB	
		390 MHz	O,20 dB 0,25 dB	0,25 dB 0,45 dB		2-7-97
4.4.8	Stability	Stable with the input				
		terminated into a 2.5:1 mismatch and the output at all impedance's.	Accept X Reject			2.7-97
4.4.9	Start-up	Capable of starting			!	
	_	operation at -30°C and +60°C with a maximum current draw of 45 mA	Accept X Reject			
		Maximum Current	39.3 _{ma}			2-10-57

NOTE: Review all recorded data and signify acceptance below.

:QPM 153

Technician SWoff (Et II)	Date: 2-10-97
Quality Assurance June 34	Date: 2-18-97
	Date: 2-19-97
GSI: Maynie hours	Date: 2-10-97

Amplica, Inc.						Ę	
Newbury Park, CA 91320	SIZE	FSCM NO					5 1
DRAWN	Α	510		ΓA	P1771	"	EV.
ISSUED	SCAL	.E	[SHEET	37 OF		
			 	OHEL	3 / UF	39	

Serial No.:___

TEST DATA SHEET 9

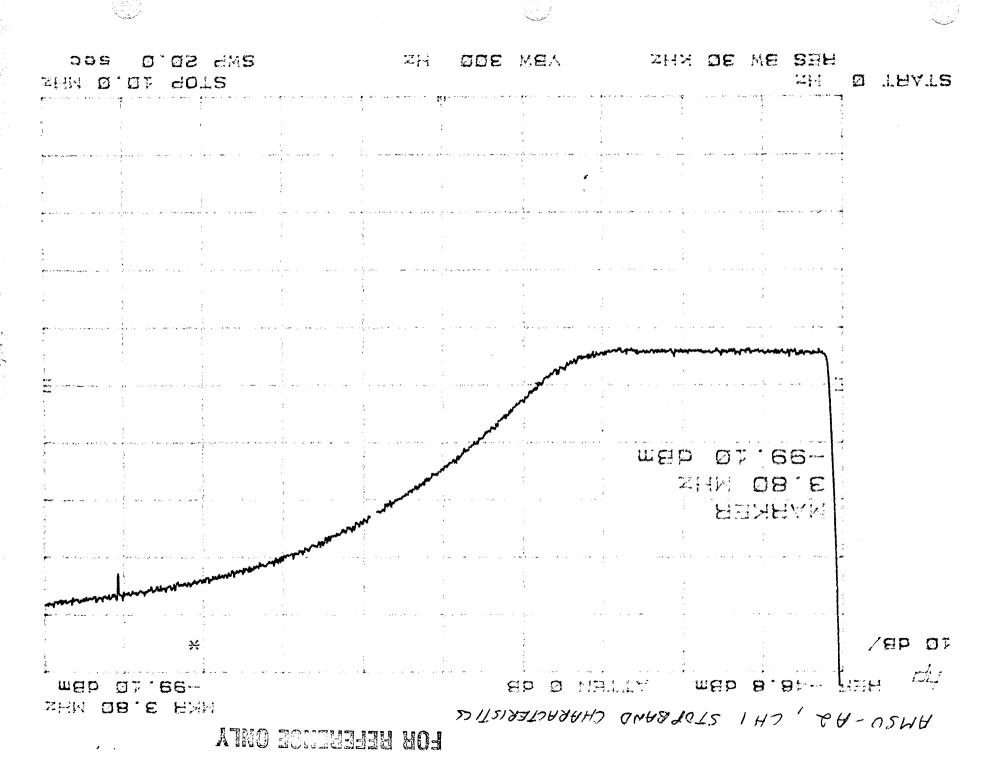
Bandpass Characteristics Test Data (Pa	ragraph 3.5.3) (A2)
--	---------------------

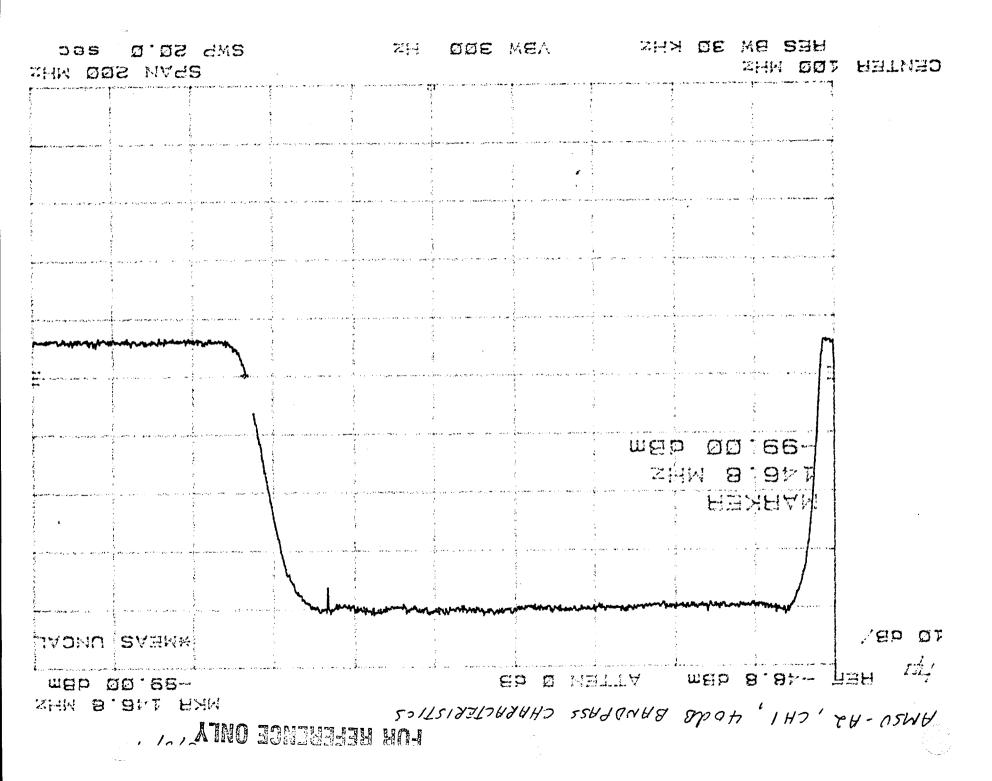
Test Set	up Verified:	-K	Signature	} Base	plate Temperatur	e (T _B) <u>23, \$</u> °C		•
Compo-	Channel	ν _b (ν)	I _b (mA)		Frequency IHz)	3 dB BW I		Pass/ Fail
nent	No.			Lower	Higher	Required MAX.	Measured	, .
LO	1	10.02	78.2	9.1	134.5	270	125.4	P
	2	10,02	116,6	9.4	88.9	180	19.5	P
Mixer/ Amps	All	10.01	84.2					
		•	-		•			
Compo-	Channel	V _b (V)	} !		Frequency	40 dB BW (Mi	-iz)	Pass/ Fail
nent	No.	2, 7		Lower	Higher	Required MAX.	Measured	<u> </u>
LO	1:	10,02	78, X	3.8	146.8	351	143.0	P
	2	10,02	116.6	3.8	99.9	234	96.1	P
Mixer/ Amps	All	10,01	84.2					
	1356 FO		- /		Test Engineer	(7A)	MAR 9 '98	

A-12

Date: 15.00 Sp. 37.00

Quality Assurance:_





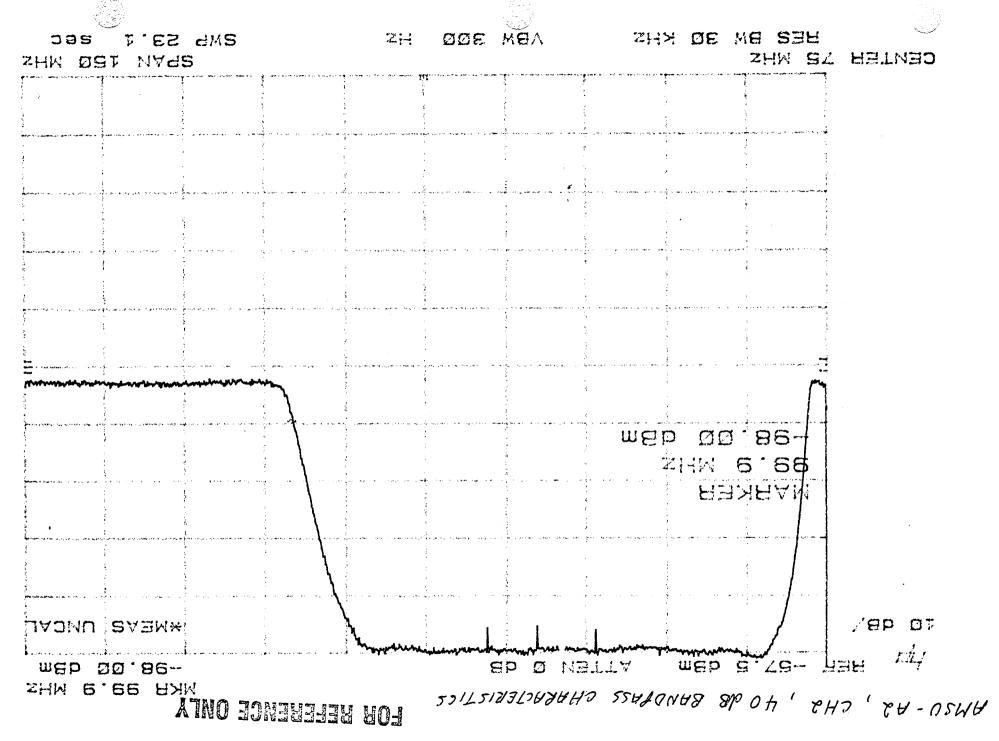
TEST DATA SHEET 9

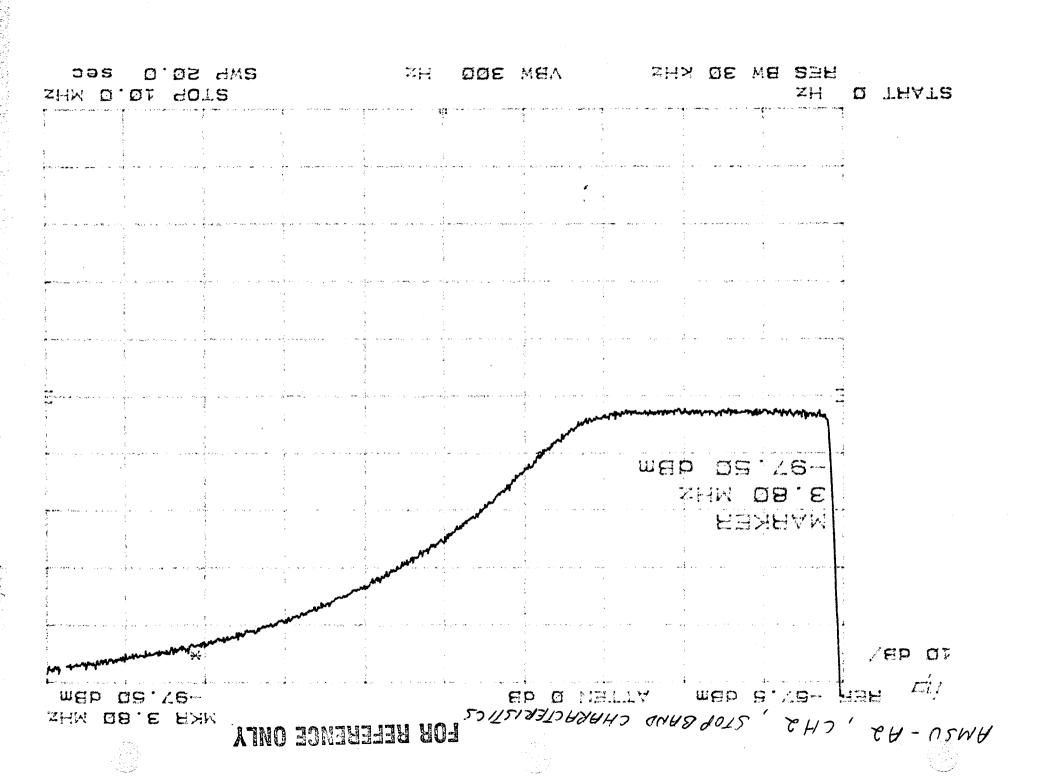
Randnass	Characteristics	Test Data	(Paragraph	3.5.3)	(A2)
בצפטטונום ס	Cliataciciisucs	I CSL Dala	(raragrapu	2.2.2	(·,

Test Setup Verified: Baseplate Temperature (T _B) 23.5 °C									
Compo-	Channel	ν _b (ν)	I _b (mA)		Frequency Hz)		Frequency Hz)	Pass/ Fail	
nent	No.		. /	Lower	Higher	Required MAX.	Measured	,	
LO	1	10.02	78.2	9.1	134.5	270	125.4	P	
	2	10,02	116,6	9.4	88.9	180	79.5	P	
Mixer/ Amps	All	10.01	84.2						

Compo-	Channel	V _b (V)	I _b (mA)		40 dB BW Frequency (MHz)		40 dB BW Frequency (MHz)	
nent	No.			Lower	Higher	Required MAX.	Measured	
LO	1.	10,02	78, 2	3.8	146.8	351	143.0	P
	2	10,02	116.6	3.8	99.9	234	96.1	P
Mixer/ Amps	All		84.2					

Part No.: 1356441-1	Test Engineer:
Serial No.: FOI	Quality Assurance: (268)
	Date: 3/6/98





TEST DATA SHEET 12 (Sheet 1 of 3)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: Kawking Signature	Baseplate Temperature (T _B) 25.2 °C
--	---

Compo-	Channel	ν _b (ν)	I _b (mA)	T _H (°C)	V _H	(V)	T _C (°C)	V _c (V)		
nent	nent No.				Mean	Standard Deviation		Mean	Standard Deviation	
				24.2	-92316	.00020	-193.9	-43541	.00023	
				24.2	792326	.00021	-193.9	7.63639	.00019	
				24.2	-92314	.00020	-/93.9	763663	.00017	
			78.2	24.2	-923/3	.00021	-193.4	7.63653	.00017	
LO	1	10.02		24.2	-92297	.00021	-193.9	63748	.00020	
				24.2	-92304	.00021	-193.9	-63682	.00018	
				24.2	-92274	.00019	-193.9	-63750	.00023	
				24.2	-92273	.00022	-193.9	- 43773	.00019	
				24.2	-92266	.00020	-193.9	-43753	.00015	
				24.2	-92266	.00020	-193.9	- 63781	.00017	
Mixer/	All	10.01	84.2							
Amps		10.01	0-1.2							

Part No.: /35644/-/	Test Engineer: hunting
Serial No.: FO/	Quality Assurance: (997) MAR 9 '98
	Date: 3/6/98

TEST DATA SHEET 12 (Sheet 2 of 3) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified:	Thenthy	Baseplat
-	Signature	

Baseplate Temperature (T_{AB}) $25.2^{\circ}C$

	 	NF ((dB)		NPS (K)						
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail		
1	2.85 4,55	3.78			0.09	0,04					
	7	3,79			0.09	0.00					
		3,80			0,09	0.04					
		3,80			0.09	0.00					
·		3.81.			0. 99	0.02.					
		3.80			0.09	0.04					
		3.82	N. C.		0.09	0.07					
		3,82			0.09	0.05					
		3.82			0.09	0.04					
		3.82			0.09	0.04					
	4,55	12.5	3,81	P	0,09		0.04	0,07	ρ		

Pass = P, Fail = F

Part No.: /356 441-1	Test Engineer: Thankley
Serial No.:F01	Quality Assurance:
	Date: 3/6/98

FOR REFERENCE ONLY

AMSU-A TEST S/N FO /

14	1SU-A2, CH1,	NOISE FIG	URE AND NOISE	POWER STABILIT	Y TEST DATA	3/6/98
SE	EQ TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (d9)	NPS(K)
1	WARM TEST	297.35	92315710	.00019991		.04185851
2	2 COLD TEST	79.25	63541378	.00022970	3.77942007	. 4105051
3	3 WARM TEST	297.35	92325990	.00020744	2 2020200	.00210158
	4 COLD TEST	79.25	63639213	.00019298	3.79328398	.00210138
5	WARM TEST	297.35	92315638	.00019899		04440007
£	S COLD TEST	79.25	63663971	.00017023	3.79816659	.04448093
•	7 WARM TEST	297.35	92312633	.00020738		
{	B COLD TEST	79.25	63653154	.00017087	3.79682736	.00130553
9	9 WARM TEST	297.35	92297226	.00020545		
1 (79.25	63748460	.00019583	3.81308176	.02139291
1		297.35	92303925	.00021444		
1:		79.25	63682991	.00017934	3.80231995	.04160816
1		297.35	92274501	.00018722		
1.		79.25	63750388	.00022956	3.81579245	.06805419
1		297.35	92273489	.00021665		
11			-,63773451	.00018680	3.81945001	.04818275
1		297.35	92265720	.00019917		
1:			63752721	.00014871	3.81708510	.04393011
1			92266068	.00020129		
	D 17111111 1		63780795	.00017014	3.82137125	.03789137
2	Ø COLD TEST	10.123	.00100100		•	

CH. 1),125.4 MHz MHz

NOISE FIGURE AVERAGE (dB) = 3.80569955551

NOISE POWER STABILITY (K) = .0350806036513

NOISE POWER STABILITY DELTA (K) = .0667486652156

 $NPS_MAX (K) = .0680541919666 NPS_MIN (K) = .00130552575098$

INTEGRATION TIME = .158

							, , , , , , , , , , , , , , , , , , ,										
					EIVER SHE	LF					To	290					1
	(BPF 125.	4 MHZ &	LO FREQU	UENCY 23.	7984 GHZ)						Thot	297.35	BandW	1.25E+08			
	3/6/98								T ****		Tcold	79.25	IntTime	0.158	overall		+
											CHconst	6.1327E-06			expected		+
ta Description	Number Of	V Hot	V Hot	V Cold	V Cold	Scale Fac	Hot	Cold	Y Fact	Log(Y)	Noise Fig	Tsys	dTrec	theory	test		+
	Samples	Mean	Std Dev	Mean	Std Dev	K/Volt	NEdT	NEdT		dB	dB	(K)	(K)	dG/G	NEdT		1
											77 a 8-b -b						+
ta Description	Samples	MeanVh	StdDevVh	MeanVc	StdDevVc	ScalFac	HNEdT	CNEdT	YFact	NPS	NFdB	Tsys	dTrec	theorydG/G	testNEdT	Wload	CI
	100				0.000229700		0.152	0.174	1.452844003	0.042	3.779	699.7228068	0.157	0.150	0.217	297.35	7
	100	***		1	0.000192980		0.158	0.147	1.450772026	0.002	3.793	701.9365898	0.158	0.151	0.218	297.35	7
	100				0.000170230		0.151	0.130	1.450045238	0.044	3.798	702.7179482	0.158	0.151	0.218	297.35	7
	100				0.000170870		0.158	0.130	1.450244445	0.001	3.797	702.5035332	0.158	0.151	0.218	297,35	7
	100	-0.9229723	0.000205450	-0.63748460	0.000195830	763.9559622	0.157	0.150	1.447834599	0.021	3.813	705.1101610	0.158	0.151	0.219	297.35	
	100	-0.9230393	0.000214440	-0.63682991	0.000179340	762.0296389	0.163	0.137	1.449428231	0.042	3.802	703.3832663	0.158	0.151	0.219	297.35	
	100	-0.9227450	0.000187220	-0.63750388	0.000229560	764.6162389	0.143	0.176	1.447434343	0.068	3.816	705.5458190	0.159	0.151	0.219	297.35	
	100	-0.9227349	0.000216650	-0.63773451	0.000186800	765.2621375	0.166	0.143	1.446895025	0.048	3.819	706.1340743	0.159	0.152	0.219	297.35	
	100	-0.9226572	0.000199170	-0.63752721	0.000148710	764.9142765	0.152	0.114	1.447243640	0.044	3.817	705.7536646		0.151	0.219	297.35	
	100	-0.9226607	0.000201290	-0.63780795	0.000170140	765.658802	0.154	0.130	1.446612072	0.038	3.821	706.4432709		0.152	0.220	297.35	
															0.220	277.55	+-
AVERAGE		-0.9229509	0.000203794	-0.63698652	0.000187416	762.6901875	0.155	0.143	1.448935362	0.035	3.806	703.9251134	0.158	0.151	0.219	297.35	7
															0.2.7	277.00	+
	1.000				·												1
	0.900	+						,							7		F
	0.900																
									,		, 10 9 kg a sandan						
	0.800 0.700																
	0.800 0.700 0.600																
	0.800 0.700 0.600																
	0.800 0.700 0.600 0.500															INEdT	
	0.800 0.700 0.600															-INEdT	
	0.800 0.700 0.600 0.500															HNEdT	
	0.800 0.700 0.600 0.500 0.400 0.300		0.15	· · · · · · · · · · · · · · · · · · ·	151	0.158	0.157		163		0.16	S6 0		0.454		HNEdT	
	0.800 0.700 0.600 0.500 0.400 0.300 0.200	0.152	0.15	58 0.	.151	0.158	0.157	(0.163	0.143	0.16	66 g.	152	0.154			
	0.800 0.700 0.600 0.500 0.400 0.300 0.200 0.100	0.152	0.15	58 O	.151	0.158	0.157		1.163	0.143	0.16	36 o.	152	0.154	•	HNEdT	
	0.800 0.700 0.600 0.500 0.400 0.300 0.200	0.152	0.15		151	0.158						0.				HNEdT]	
	0.800 0.700 0.600 0.500 0.400 0.300 0.200 0.100	0.152				1.34 . 1.4 	5	urement se	6	0.143	0.16	0.	152	0.154		HNEdT	
	0.800 0.700 0.600 0.500 0.400 0.300 0.200 0.100	0.152				1.34 . 1.4 	5		6			0.				HNEdT	
	0.800 0.700 0.600 0.500 0.400 0.300 0.200 0.100	0.152				1.34 . 1.4 	5		6			0.				нест	
	0.800 0.700 0.600 0.500 0.400 0.300 0.200 0.100	0.152				1.34 . 1.4 	5		6			0.				нест	
	0.800 0.700 0.600 0.500 0.400 0.300 0.200 0.100	0.152				1.34 . 1.4 	5		6			0.				HNEdT	

TEST DATA SHEET 12 (Sheet 1 of 3) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: That Signature	Baseplate Temperature (T _B) <u>25.6</u> ℃
-------------------------------------	---

Compo-	Channel	V _b (V)	I _b (mA)	T _H (°C)	V _H	(V)	T _C (°C)	v _c	(V)
nent	No.				Mean	Standard Deviation		Mean	Standard Deviation
				23.8	-1.029	0,00027	-193.9	-0.710	0.00021
				23.8	-1.029	0,00031	-193.9	-0,710	0,0002
				23.8	-1,029	0,0003	-193.9	-0,711	0,00026
	2	42		23.8	-1,029	0,00032	-/93,9	-0,712	0.00019
LO	2	10. Q		23,8	-1.029	0,00031	-193.9	-0,713	0,00021
				23,8	-1,029	0,00029	-/93.9	-0,713	0,00025
				23.8	-1.029	0,00028	-193.9	-0,713	0,00022
				23,8	-1.029	0,00030	-193.9	-0,714	0,00020
				23,8	-1,029	0,00030	-193.9	-0,714	0,0002/
				23,8	-1,029	0.00027	-193.9	-0.714	0,00023
Mixer/	All		D. // 5						
Amps		10,01	84.2						

Part No.:	Test Engineer: Thursday
Serial No.: Fol	Quality Assurance: (830) MAR 9 93
	Date: 3/7/98

TEST DATA SHEET 12 (Sheet 3 of 3)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: Kanture Signature	Baseplate Temperature (T_B) 25.5 $^{\circ}$ C
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		NF	(dB)				NPS (K)			
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)			Delta	Pass/Fail	
2	3.56 4.20	3.80			0.09	0.08				
	·	3.80			0.09	0.08				
		3.81			2.09	0,04				
		3.82			009	0.09				
		3.84			0.09	0,07				
		3.84			0/99	0.03				
		3.85			0.00	0.04				
		3,85			0.09	0.05				
		3,85			0.09	0.05				
		3,86			0.09	0,08				
	4,20		3.83	P	0.09		0.06	0.06	P	

Pass = P, Fail = F

Part No.: 1356441-1	Test Engineer: Harkey
Serial No.: FO/	Quality Assurance:
	Date: 3/07/98

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A2, CH2, S/N F01, NF & NPS TEST DATA 3/7/98

SEQ	TEMP_TEST	TEST TEM	P VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.95	-1.02885625	.000267 9 8		
2	COLD TEST	79.25	71010071	.00020873	3.80040508	.07623813
- 3	WARM TEST.	296.95	-1.02897869	.00031355		
4	COLD TEST	79.25	71023358	.00023520	3.80107055	.08086814
5	WARM TEST	296.95	-1.02921730	.00028553		
5	COLD TEST	79.25	71135092	.00025834	3.81419655	.03628374
7	WARM TEST	296.95	-1.02904896	.00031965		
8	COLD TEST	79.25	71191248	.00018692	3.82356223	.09177226
9	WARM TEST	296.95	-1.02899225	.00030599		
10	COLD TEST	79.25	71299467	.00021361	3.83909995	.05656794
11	WARM TEST	296.95	-1.02917542	.00028773		
12	COLD TEST	79.25	71290952	.00019845	3.83615801	.02700339
13	WARM TEST	296.95	-1.02893985	.00028471		
14	COLD TEST	79.25	71346541	.00022013	3.84614360	.03920712
15	WARM TEST	296.95	-1.02900078	.00029763		
16	COLD TEST	79.25	71377054	.00019921	3.84979963	.04521704
17	WARM TEST	296.95	-1.02887872	.00030019		
18	COLD TEST	79.25	71377848	.00020827	3.85108843	.05279764
19	WARM TEST	296.95	-1.02876199	.00026591		
20	COLD TEST		71431203	.00023461	3.85965115	.07897914

CH. 2 ,79.5 MHz MHz

NOISE FIGURE AVERAGE (dB) = 3.83216419373

NOISE POWER STABILITY (K) = .0594934523171

NOISE POWER STABILITY DELTA (K) = .0647688752379

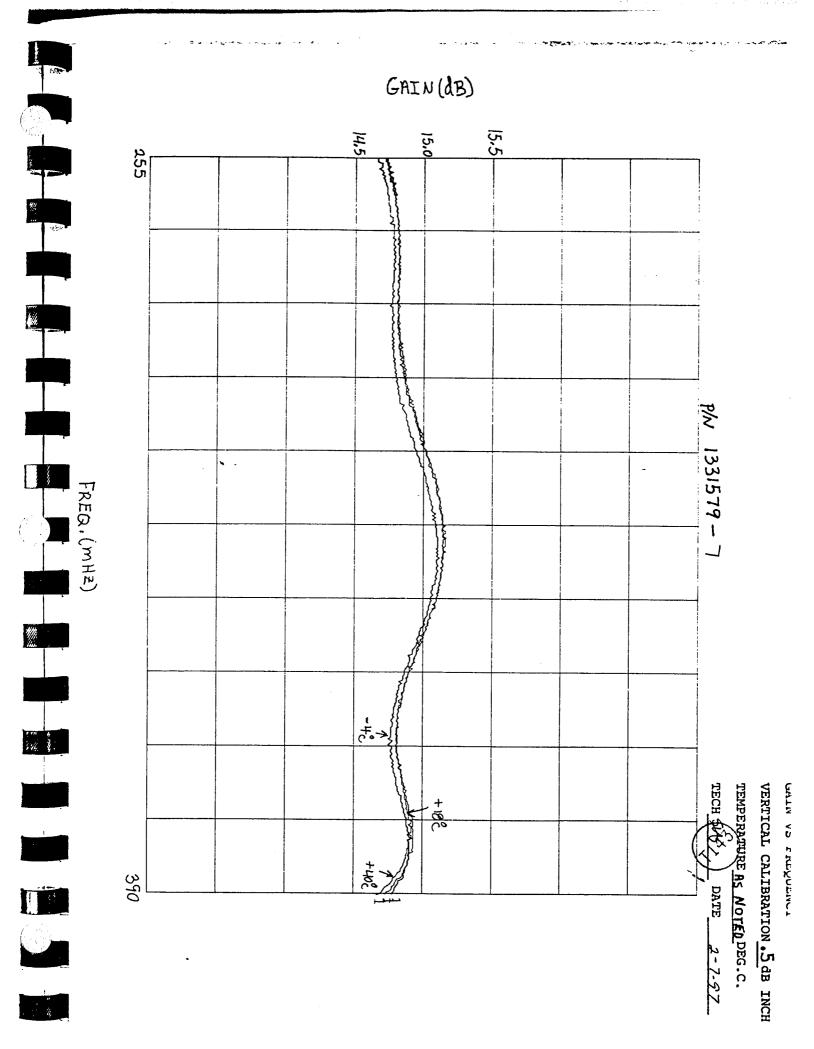
 $NPS_MAX(K) = .0917722641514 NPS_MIN(K) = .0270033889135$

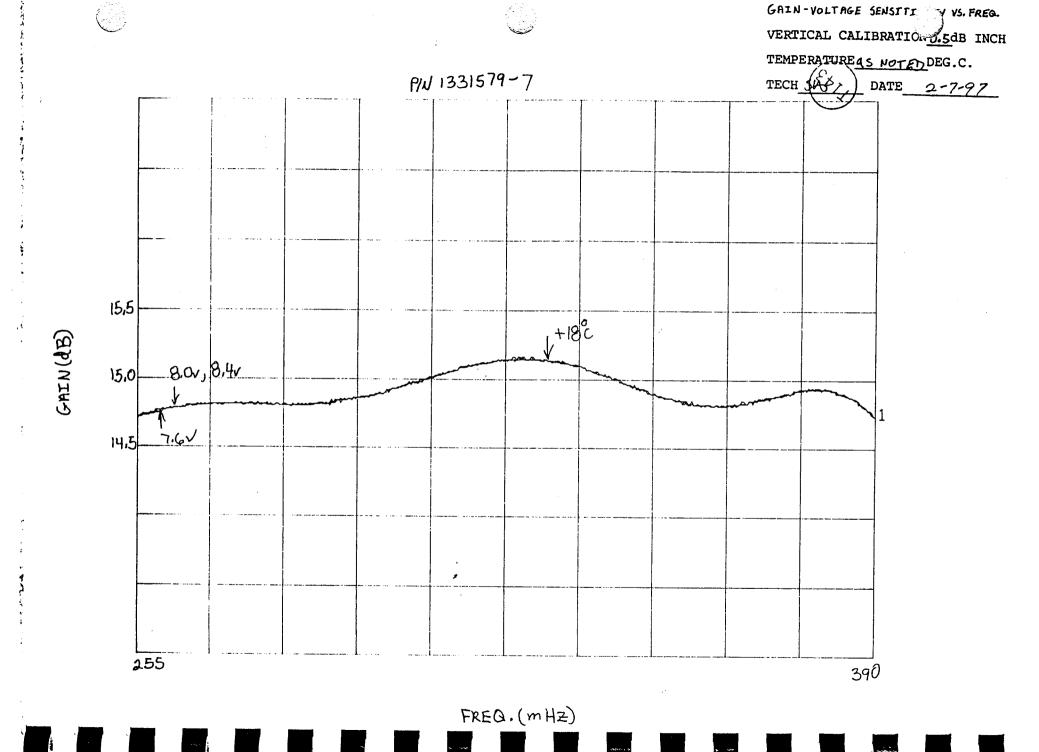
INTEGRATION TIME = .158

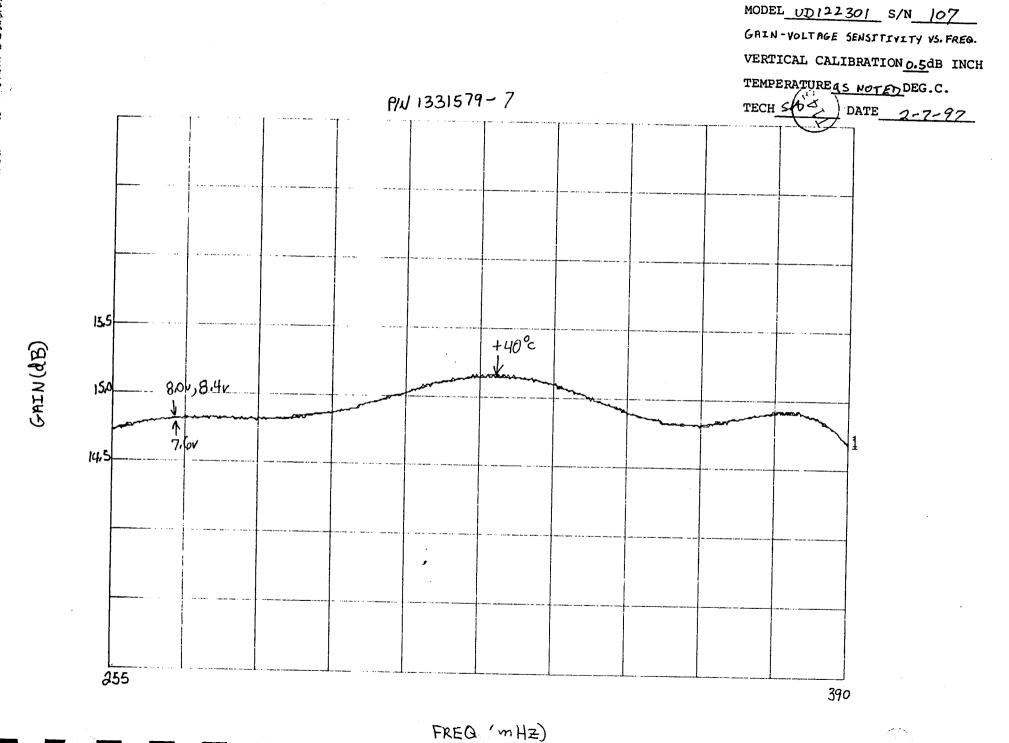
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57.6L	56.962	122.0	0.152	002.0	0869187.707	3.832	650.0	1.444231192	671.0	202.0	6471448.786	745812000.0	£878 2 717'0-	/86767000:0	/ C86870 I-		VAEBVCE	,
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52.9T	56.962	22.0	£\$1.0	102.0	712.2325130	098.€	670.0	1.440213726	291.0	281.0	7110025.269	019452000.0	5021541/.0-	016997000.0	079/870:1-	100		
SZ.67		252.0	621.0		2605548.017	3.851		1.441453825	441.0		2422168.069							
	\$6.962	22.0	621.0		9774£23.017	3.850		207023144.1	8£1.0		9£\$606\$.069		1			•		
	\$6.962	0.252	221.0		9925240.017	3,846		810271244.1	221.0		2627170.068							
-	296.95	122.0	221.0		7882724.80T	3.836		1.443626984	751.0	i -	6888778889		+					
	\$6.962	122.0	221.0		97£9209.807	9£8.£		273791574.1	741.0	112.0	9926267889							
SZ.97	296.95	052.0	0.152		722039E.307	3.824		291174244.1	0.128	612.0	844552448	·						t
	296.95	052.0	121.0		8782688.407	3.814		506848944.1	771.0	961.0		+		0.000285330		001		
	\$6.962	677.0	181.0	861.0	7020£87,207	108.€		621687844.1	191.0	412.0	78066,286			0.0003135000.0		001		
	56 967	677.0	151.0	861.0	£2£4979.20T	3.800		Z6LL888pp-1	6,143	£81.0				086752000.0		001		
Cload	Wload	testNEdT	theorydG/G	ээтТр	Tsys	NEGB	SdN	YFact	CNEQL	HMEGT	ScalFac	StdDevVc	MeanVc	StdDevVh	MeanVh	Samples	Description	pipa
					<u>_</u>			, un	u. 3110	2,3,41	410	-71 70173	-71)(-uxzur-3	-1113594	13	:,-i=000(I	
		NEQL	9/9p	(K)	(K)	ЯP	ЯР		NEQL	NEQL	K/Volt	Std Dev	Mean	Std Dev	Mean	Samples		+-
		1251	theory	DaiTb	Tsys		Log(Y)	Y Fact	Cold	Thair	Scale Fac	V Cold	A Cold	10H V	JoH V	Number Of	Description	Piper
		expected	- b'	, 4.	6.1327E-06	CHconst	22/1	<u> 1</u> /	FIED	7-11	0 21003	FISA	PINJA	· ······	*** A A	30 20 quanty	itairose(I	3,00
		overall	851.0	əmiTinl	 	Tcold			1			-	-	 	-	061116		1
			7.95E+07	BandW	26.962	Thot		 	-			(arro oc	COLC TOTAL	TO DON'T C		86/L/8		
l			20.430 L						<u> </u>					о ғаебиғ				<u> </u>
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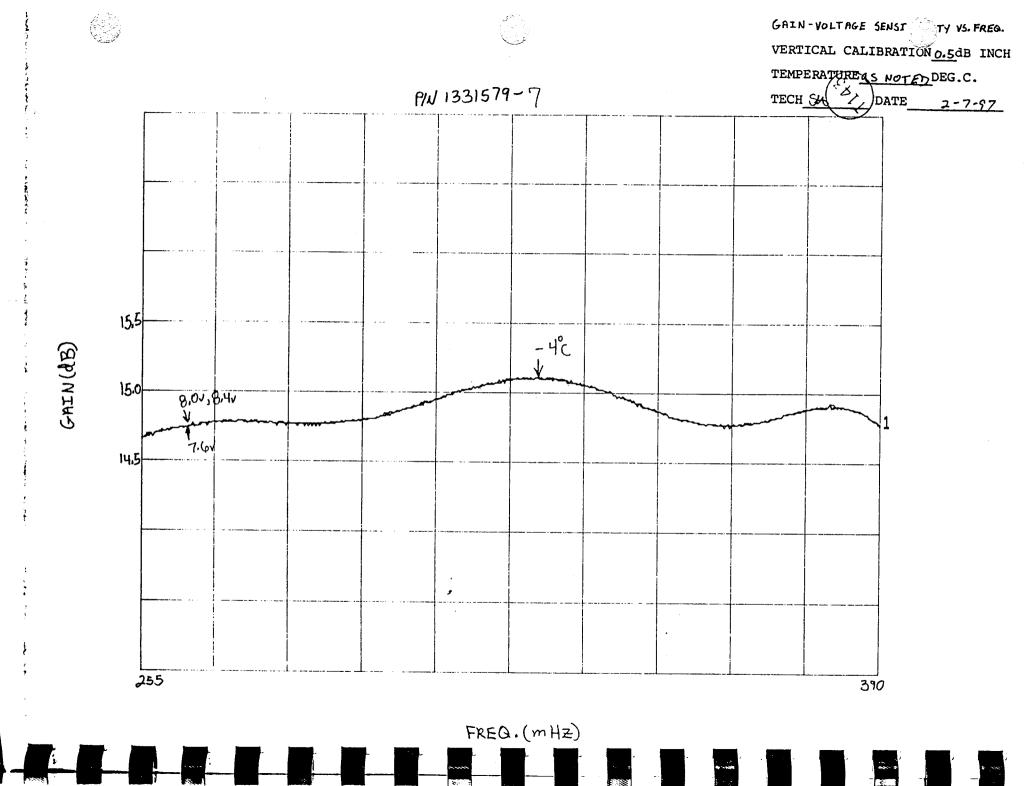
TEST DATA SHEET 15	
Tunable Short Test Data (Paragraph 3 5	5) (42)

	TEST DATA SHEET 15 Tunable Short Test Data (Paragraph 3.5.5) (A2)
Test Setup Verif	1 0 1
Channel No.	Measured Value
. 1	T _H 24.2 °C V _H - 923.1 mV T _C - 193.9 °C V _C - 635.4 mV
Voltage (mV)	921.9 921.5 921.4 921.2 921.4 929.3 929.4 929.4 929.2 929.2
Position (mil)	80 85 90. 95 305 310 015 310
ТД	638622 K Required Value 36.8 K max Pass/Fail P
2	TH 23.8. °C VH -/028.8 mV Tc -/93.9 °C Vc -7/0,1 mV
Voltage (mįV)	1024.3 1024.2 1023.5 1023.2 1023.6 1038.4 1039.2 1038.3 1038.3 1037.7
Position (mil)	10 15 20 25 30 140 145 150 155 160
ΤΔ	How Kolley Walue 35, 6 K max Pass/Fail P
modered retaili	e will be calculated for each channel based on the Pass = P, Fail = F aximum required value:
Given $\overline{a_i}$ and $\overline{a_j}$	as antenna return loss measurements (from polar diagram)
and θ being the ph	hase difference between $\overline{a_i}$ and $\overline{a_j}$, calculate return loss as:
$b = \left(a_i^2 + a_j\right)$	$(2a_ia_j\cos\theta)^{1/2}$
The maximum requi	ired value is equal to 1.2/b.
Part No.:/35	Test Engineer: Tony Luna
Serial No.:	O / Quality Assurance:
	Date: 3/7/98









Channel 11 Amplifier

IF Amplifier (P/N:1331579-10, S/N: 107)

APPENDIX C ATP1774 DATA SHEET MODEL NUMBER UD114302 AEROJET P/N 1331579-10

s/N<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	T 5
4.1.1	Examination of Product		Accept_X Reject	-4.0	+40°C	2-8-57
4.2.2	* Current					607/
4.4	Limiting	200 mA maximum Reg. VOLTAGE=				2-8-97
***	Electrical Test					1
4.4.1	* Polarity Reversal Protection	No Damage	Current			
			Reject			
	Short Open Protection	No Damage	Accept_X_ Reject			<u>8-8-97</u>
	Output Coupling	Output shall be AC coupled	Accept X Reject			2-8-97
4.4.2	Gain vs. Freq. 255 MHz to 390 MHz	38.5dB Min., 39.5dB Max. -4°C to +40°C Attach x-y plot	Max 39.22 dB Min 38.85 dB Accept X Reject	Max 39,39 dB Min 39,09 dB Accept X Reject	Max 39.00 dB Min 38.55 dB Accept > Reject	2-8-9
	Gain Flatness	.5 dB Maximum Worse Case	Accept × Reject dB	Accept X Reject 0,30 dB	Accept X Reject 0.45 dB	2-897
	Gain Temp. Sensitivity	+.44 dB from -4°C to +40°C Worse Case	Accept X Reject	Accept X Reject dB	Accept K Reject dB	2-8-7
1.4.3	Gain-Voltage Sensitivity	<pre><.5dB/v Worse Case</pre>		0,03 dB	0:02 dB 39.8 mA	 /
	Input Currents	7.6 to 8.4 Vdc 8.0v 45ma MAX. 8.4v	39,3 mA 39,9 mA	38, ma 39,7 ma	<u>40,5</u> mA <u>41,1</u> mA	
		Attach X-Y Plot	Accept X Reject	Accept X Reject	Accept X Reject	<u>a-8-97</u>
NOTE:	* TEST PEOUTPED	ON PROTOFLIGHT INTE ONLY				

NOTE: * TEST REQUIRED ON PROTOFLIGHT UNIT ONLY

® Amplica,Inc.					
Newbury Park, CA 91320	SIZE	FSCM NO			RE\
DRAWN	A	510	25	ATP1774	
ISSUED	SCAL	Æ		SHEET 35	OF 39

APPENDIX C ATP1774 DATA SHEET MODEL NUMBER UD114302 AEROJET P/N 1331579-10

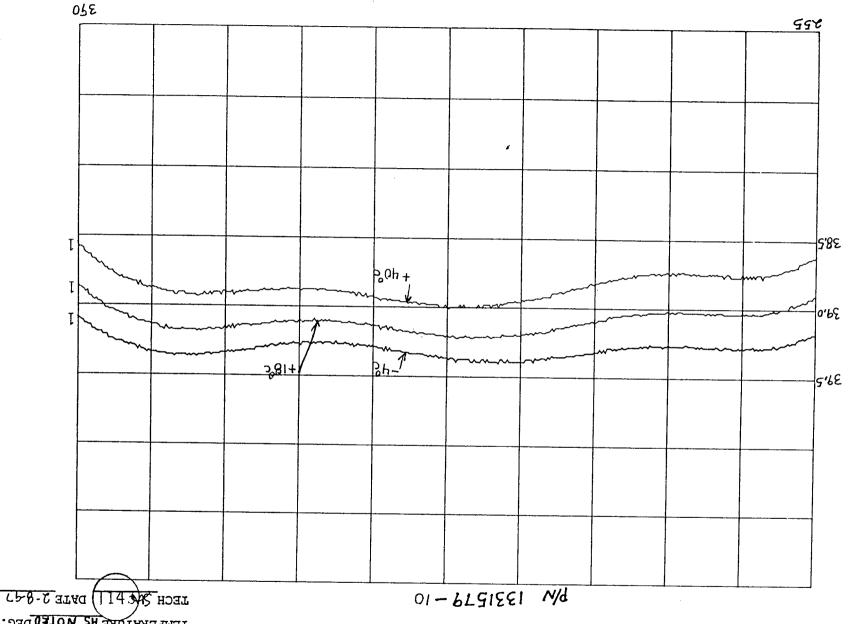
s/n<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	T 53.55
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept X Reject		1400	DATE
		255 MHz 322.5 MHz 390 MHz	0,50 dB 0,45 dB 0,65 dB	0.70 dB 0.65 dB 0.80 dB	0.45 dB 0.45 dB 0.60 dB	2-8-87
4.4.8	Stability	Unconditionally Stable	Accept_X_ Reject			2-8-97
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 50 mA	Accept X Reject	·		
		Maximum Current	<u>41,2</u> mA			2-10-57

NOTE: Review all recorded data and signify acceptance below.

Technician Stofma [27]	Date: 2- 10-97
Quality Assurance fine fund	Date: 2-18-97
CSI: Meler level	$\binom{\binom{90}{176}}{\binom{176}{6}}$ Date: $2-19-97$
GSI: Mayorie Thomas	Date: 2-10-97

Amplica, Inc.								
Newbury Park, CA 91320	SIZE	FSCM NO	λΩ	P1774				REV.
DRAWN	Α	510	A	P1//4				
ISSUED	SCAL	.E	···	SHEET	37	OF	ىـــــ 39	



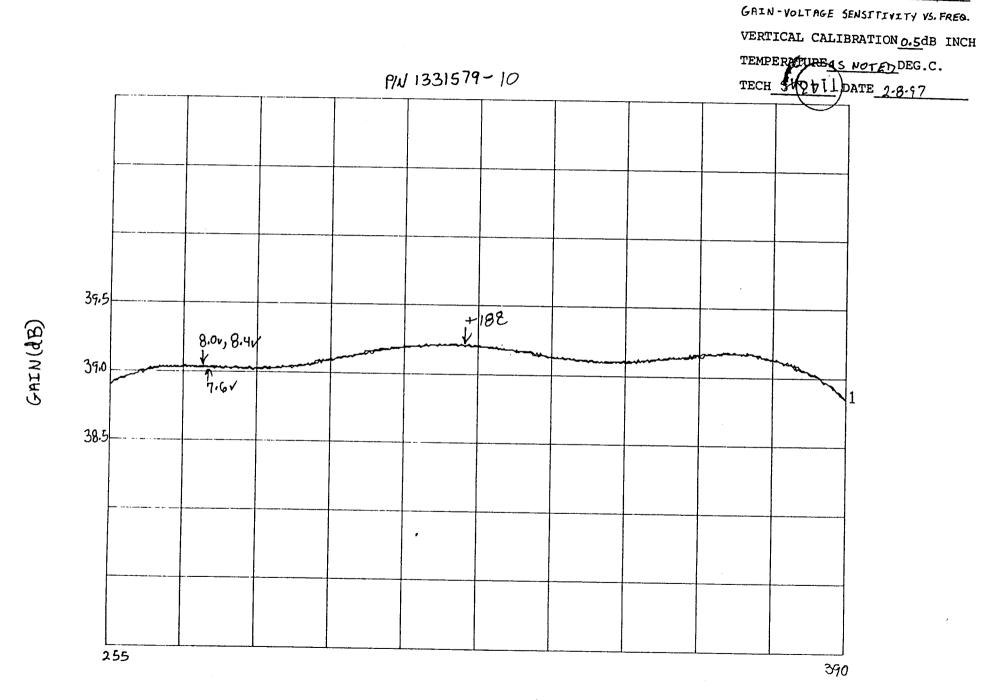
TEMPERATURE AS NOTED DEG.C.

VERTICAL CALIBRATION $_{\bullet}\overline{\mathbf{5}}$ dB INCH

CYIN AS EKEĞNENCK

WODEL UDINGOL S/N 107

GAIN (dB)



MODEL UD114302 S/N 107

FREQ. (mHZ)

GAIN(&B)

GRIN-VOLTRGE SENSITIVITY VS. FREG.
TEMPERATURE SENSITIVITY VS. FREG.

WODER OD IIH307 S/N 107

GAIN-VOLTAGE SENSITIVITY VS. FREQ. VERTICAL CALIBRATION 0.5dB INCH TEMPERATUREAS NOTED DEG.C. PN 1331579-10 TECH SHOE DIL 2-8-97 39,5 GAIN (&B) +402 39,0 8,00,8,40 7.61 38.5 255 390

MODEL UD 114302 S/N 107

FREQ. (mHZ)

Channel 12 Amplifier

IF Amplifier (P/N:1331579-11, S/N: 107)

APPENDIX C ATP1775 DATA SHEET MODEL NUMBER UD415301 AEROJET P/N 1331579-11

s/n 107

PARA	TEST	SPECIFICATION	+18°C	100		
1.1.1	Examination of			-4°C	+40°C	DATE
	Product		Accept X Reject			2-10-9
.2.2	* Current			,	•	1 10
	Limiting	200 mA maximum				
		Reg. VOLTAGE= A/A VDC			ļ	
1		Total R= A//A ohm				
		max. current draw =				
.4	Electrical	İ		1		MA
ł	Test	Ī		1		1713
		·				1
4.1	* Polarity		Current			
i	Reversal	No Damage	//A_may,			
- 1	Protection		Accept_N			
j			Reject			N/A
Ī	Short Open	No Damage	Accept ×		}	7
1	Protection .		Reject			1000
	000			1		2-10-
1	Output Coupling	Output shall be	Accept_X	1		
-	Coapiing	AC coupled	Reject			2-10.9
4.2	Gain vs. Freq.	42.5dB Min., 43.5dB Max.	V 112 22 32			
1	290 MHz to	-4°C to +40°C	Max 43.27 dB Min 43.11 dB	Max 43.40 dB	Max 4300 dB	
	355 MHz	Attach x-y plot	Accept X	Min 43.21 dB	Min 42 86dB	1
			Reject	Reject	Accept X Reject	2-10-9
	Gain Flatness	.5 dB Maximum				210 1
		.5 cm Maximum	Accept X	Accept_X	Accept_ X	[
		Worse Case	Reject_	Reject	Reject	2-10-0
	a		O.16_ dB	0.19 dB	0.19dB	2-10-9
	Gain Temp. Sensitivity	+.44 dB from -4°C to	Accept X	Accept >	Accept 💉	J
	penatrività	+40°C	Reject	Reject	Reject	ļ
		Worse Case		0.18 dB	0,30 dB	2-10-9
						
4.3	Gain-Voltage	<.5dB/v Worse Case	0,01 dB	0.00 =	- 0	
1 :	Sensitivity	+ .2dB for 7.6v		0.02 dB 35,6 mA	0/01_ dB	
	Input Currents	7.6 to 8.4 Vdc 8.0v	37,6 mA	36.4 mA	_38/mA	
1.	uput Currents	50ma MAX. 8.4v	38,2 mA	36.8 mA	39.7 mA	
1		Attach X-Y Plot	Accept X	Accept 💹	Accept X	
		moddon v-1 blog	Reject	Reject	Reject	2-10 97
1	1					للسخسح

NOTE: * TEST REQUIRED ON PROTOFLIGHT UNIT ONLY

©Amplica,Inc.				
Newbury Park, CA 91320	SIZE	FSCM NO.		REV.
DRAWN	Α	51025	ATP1775	

APPENDIX C ATP1775 DATA SHEET MODEL NUMBER UD415301 AEROJET P/N 1331579-11

s/n<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept X Reject		740 C	DATE
		290 MHz 322.5 MHz 355 MHz	0.60 dB 0.60 dB 0.60 dB	0.45 dB 0.45 dB 0.50 dB	0.45 dB 0.45 dB 0.50 dB	<u>2-10-97</u>
4.4.8	Stability	Unconditionally Stable	Accept_X Reject			2-10-5
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 55 mA	Accept_X Reject			
		Maximum Current	_39.6ma			2-10-97

NOTE: Review all recorded data and signify acceptance below.

Technician S Hoffman (T143)	Date: 2-10-97
Quality Assurance the Kina	Date: 2-18-97
CSI: Male Cut	1(00) Date: 2-19-87
GSI: Mayou Showns	Date: 2-10-97
	Date: <u>A-10-47</u>

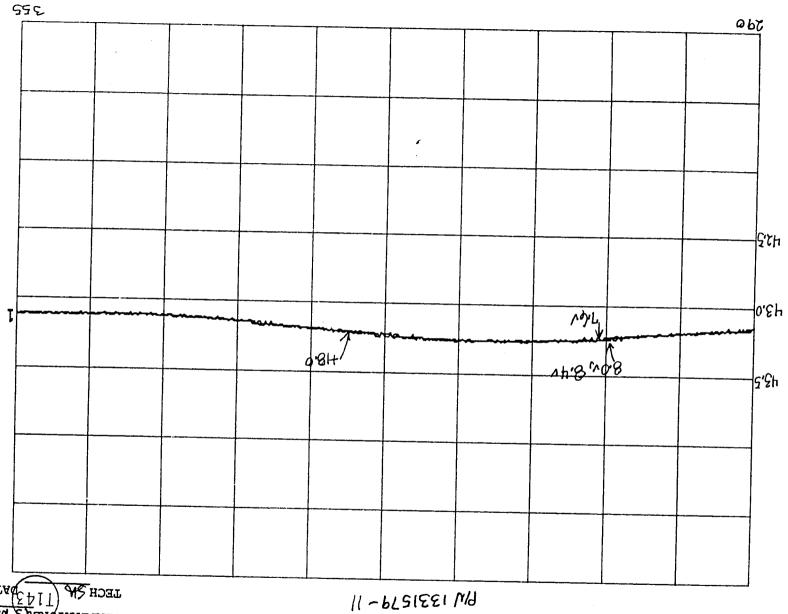
®Amplica,Ir	IC.							V. Calabi
Newbury Park, CA 9	1320 SIZE	SIZE FSCM NO. 51025		ATP1775				REV.
DRAWN	A							
ISSUED	SCA	LE			SHEET	37 OF	39	

VERTICAL CALIBRATION $\underline{\bf .5}$ db inch TEMPERATURE AS NOTED DEG.C. TECH (43) PATE 2-10-97 P/N 1331579-11 -42 43.5 GAIN (dB) 4188 43.0 +40°C 425 290 355

MODEL <u>UD415301</u> S/N 107

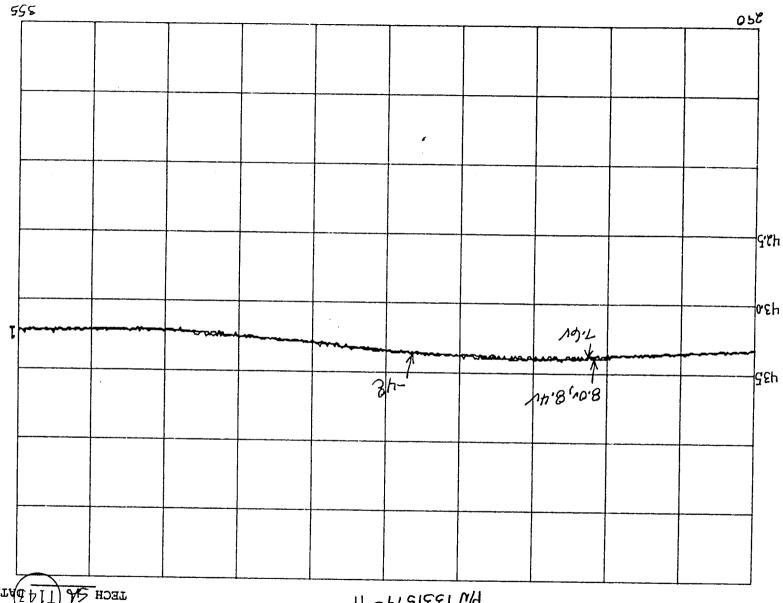
GAIN VS FREQUENCY

FREQ. (MHZ)



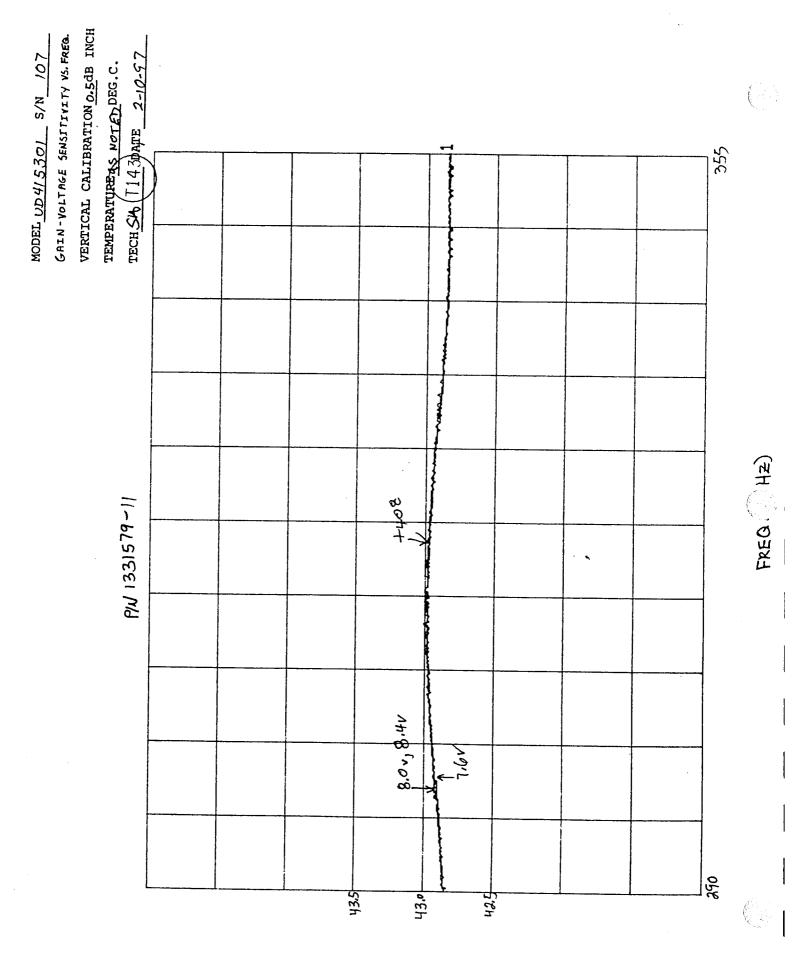
CRIN-VOLINGE SENSITIVITY VS. FREG.
TEMPERATURE OF NOTED DEG. C.
TECH SM (1143) PATE 2-10-97
TECH SM (1143) PATE 2-10-97

WODER 10 412301 S/N 107



TECH SA (T14 1) AE 2-10-97 TEMPERATURE S NOTED DEG.C. VERTICAL CALIBRATION 0.5dB INCH GRIN-VOLTAGE SENSITIVITY VS. FREG. WODER ADAIRSOL S/N 107

11 - 6721551 49



CHIN(GB)

Channel 13 Amplifier

IF Amplifier (P/N:1331579-12, S/N: 107)

APPENDIX C ATP1776 DATA SHEET MODEL NUMBER UD315301 AEROJET P/N 1331579-12

s/N<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.1.1	Examination of Product		Accept X Reject			2.8.97
4.2.2	* Current Limiting	200 mA maximum Reg. VOLTAGE=				/
4.4	Electrical Test					_ <i>M</i> A_
4.4.1	* Polarity Reversal Protection	No Damage	Current /// mA Accept ///			
			Reject			1 M/A_
	Short Open Protection	No Damage	Accept x Reject			2-8-97
	Output Coupling	Output shall be AC coupled	Accept Reject			2.8.5%
4.4.2	Gain vs. Freq. 305 MHz to 340 MHz	44.5dB Min., 45.5dB Max. -4°C to +40°C Attach x-y plot	Max <u>45,22</u> dB Min <u>44,90</u> dB Accept <u> </u>	Max <u>45.2</u> 4dB Min <u>44.9</u> 5dB Accept × Reject	Max <u>45.00</u> dB Min 44.60 dB Accept_ Reject_	44.70 s
	Gain Flatness	.5 dB Maximum Worse Case	Accept × Reject O.32 dB	Accept × Reject 0.29 dB	Accept X Reject 0.30 dB	<u>2-8-9</u> 7
	Gain Temp. Sensitivity	+.44 dB from -4°C to +40°C Worse Case	Accept X Reject	Accept × Reject O•10 dB	Accept X Reject 0.25 dB	<u>2-8-9</u> 7
4.4.3	Gain-Voltage Sensitivity	≤.5dB/v Worse Case + .2dB for 7.6v 7.6 to 8.4 Vdc 8.0v	0.02 dB		0,02 dB 41,2 mA	
	Input Currents	50ma MAX. 8.4v	40.8 mA 41.4 mA Accept × Reject	39,4 mA 40,0 mA Accept X Reject	41,9 mA 42.5 mA Accept x Reject	2-8-97
NOTE:		ON DROTTOFI LCRW ITHER ONE		Neject	keject	¢ 0-1/

NOTE: * TEST REQUIRED ON PROTOFLIGHT UNIT ONLY

*Amplica, Inc.									Villa S
Newbury Park, CA 91320	SIZE	FSCM NO		חמ	TP1776				REV.
DRAWN	Α	510	25	,	121770				
ISSUED	SCAL	E			SHEET	35	OF	39	

APPENDIX C ATP1776 DATA SHEET MODEL NUMBER UD315301 AEROJET P/N 1331579-12

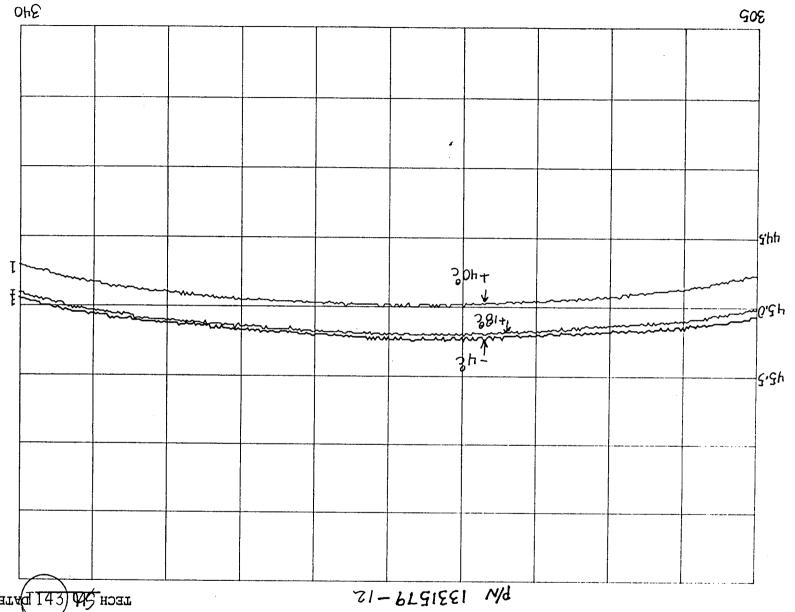
s/n<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C	14000	
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept X Reject	- 4	+40°C	DATE
		305 MHz 322.5 MHz 340 MHz	0.45 dB 0.40 dB 0.50 dB	0.55 dB 0.50 dB 0.55 dB	0.45 dB 0.40 dB 0.45 dB	2-8-57
4.4.8	Stability	Unconditionally Stable	Accept_X Reject			2-8-17
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 55 mA	Accept_X Reject			
		Maximum Current	<u>42,7</u> ma			2-10-57

NOTE: Review all recorded data and signify acceptance below.

Technician / SA	Date: 2-10-97
Quality Assurance the funa	Date: 2-18-97
CSI: Mile lunch	176) Date: 2-19-97
GSI: Mayrie hom re	Date: 2-10-97

	©Amplica,Inc.							
ì	Newbury Park, CA 91320	SIZE	FSCM NO		ת ל	P1776		REV.
	DRAWN	Α	510	25	AI	P1//0		
	ISSUED	SCAL	.E		•	SHEET 37	OF 39	



TECH 54 (21 parts 2-8-57

TEMPERATURE AS NOTED DEG. C.

VERTICAL CALIBRATION $_{\bullet}\overline{\mathbf{5}}_{}$ db inch

CYIN AS EFEGUENCY

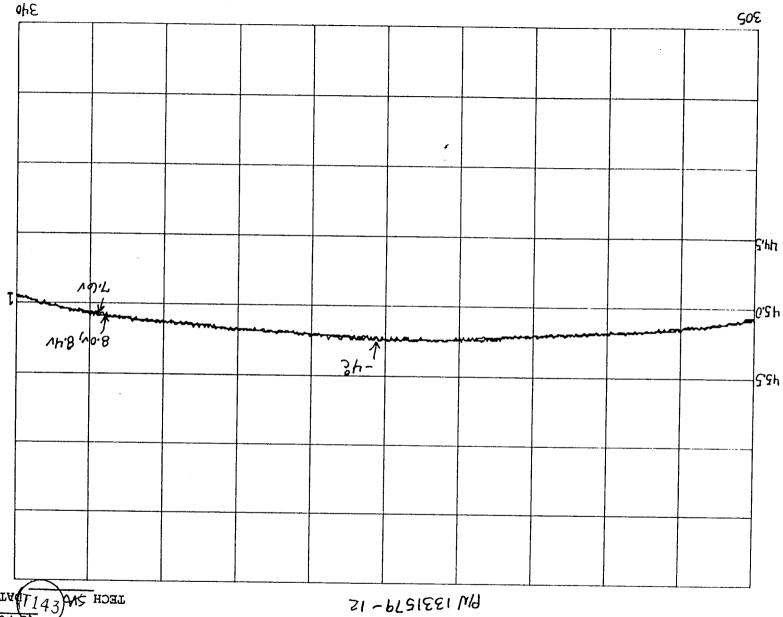
WODEL UD 315301 S/N 107

VERTICAL CALIBRATION 0.5dB INCH TEMPERATUREAS NOTED DEG.C. PN 1331579-12 TECH SIG (EDILIPATE 2-8-97 455 +18°C 8.0v, 8.4v GAIN(&B) 450 7160 44.5 305 340

MODEL UD 315301 S/N 107

GAIN-VOLTAGE SENSITIVITY VS. FREG.

FREQ. (mHZ)



TEMPERATURE S NOT ED DEG.C.
TECH SWELL AND TELL S-8-57

VERTICAL CALIBRATION 0.5dB INCH

GRIN-VOLTRGE SENSITIVITY VS. FRED.

WODEL UD315301 S/N 107

GAIN-VOLTAGE SENSITIVITY VS. FREQ. VERTICAL CALIBRATION 0.5 dB INCH TECH SNO (Still DATE 2-897 PN 1331579-12 45.5 GAIN(&B) +40° 8,00,8.40 45,0 7.60 445 305 340

MODEL UD 3/530/ S/N 107

FREQ. (mHZ)

Channel 14 Amplifier

IF Amplifier (P/N:1331579-13, S/N: 107)

APPENDIX C ATP1777 DATA SHEET MODEL NUMBER UD315302 AEROJET P/N 1331579-13

s/N_107

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.1.1	Examination of Product		Accept X Reject			2-8-97
4.2.2	* Current Limiting	200 mA maximum Reg. VOLTAGE= N/A VDC Total R= N/A ohm max. current draw =	_N/A_mA			
4.4	Electrical Test					NA
4.4.1	* Polarity Reversal Protection	No Damage	Current N/A mA Accept Reject			/^
	Short Open Protection	No Damage	Accept X Reject			28-97
	Output Coupling	Output shall be AC coupled	Accept			2-8-97
4.4.2	Gain vs. Freq. 315 MHz to 330 MHz	48.5dB Min., 49.5dB Max. -4°C to +40°C Attach x-y plot	Max 49.23 dB Min 49.19 dB Accept X Reject	Max 49.39 dB Min 49.34 dB Accept 8 Reject	Max 48.86 dB Min 48.80 dB Accept Reject	<u> 284</u> 7
	Gain Flatness	.5 dB Maximum Worse Case	Accept X Reject O.04 dB	Accept × Reject	Accept X Reject dB	2-8-97
	Gain Temp. Sensitivity	+.44 dB from -4°C to +40°C Worse Case	Accept X Reject	Accept X Reject O.18 dB	Accept X Reject 0.39 dB	2-8-97
4.4.3	Gain-Voltage Sensitivity	<pre>≤.5dB/v Worse Case</pre>	0.05 db 46.8 mA 46.2 mA	0.05 dB - 44.1 mA - 44.8 mA	0.04 dB 46.7 mA 47.4 mA	
	Input Currents	55ma MAX. 8.4v Attach X-Y Plot		45.4 mA Accept X Reject	48.0 mA Accept × Reject	2-8-97

NOTE: * TEST REQUIRED ON PROTOFLIGHT UNIT ONLY

©Amplica,Inc.	1			
Newbury Park, CA 91320	SIZE	FSCM NO.		REV.
DRAWN	A	51025	ATP1777	
ISSUED	SCAL	.E	SHEET 35 OF	30

APPENDIX C ATP1777 DATA SHEET MODEL NUMBER UD315302 AEROJET P/N 1331579-13

s/N<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C	14090	
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept X		+40°C	DATE
		315 MHz 322.5 MHz 330 MHz	0,45 dB 0,50 dB 0,50 dB	0.45 dB 0.50 dB 0.50 dB	0.50 dB 0.50 dB 0.55 dB	2.8.57
4.4.8	Stability	Unconditionally Stable	Accept_X_ Reject			2-8-9
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 60 mA	Accept X Reject		·	
		Maximum Current	<u> 48,3</u> ma			2-10-97

Date: 2-10-97

Quality Assurance Alve June 34

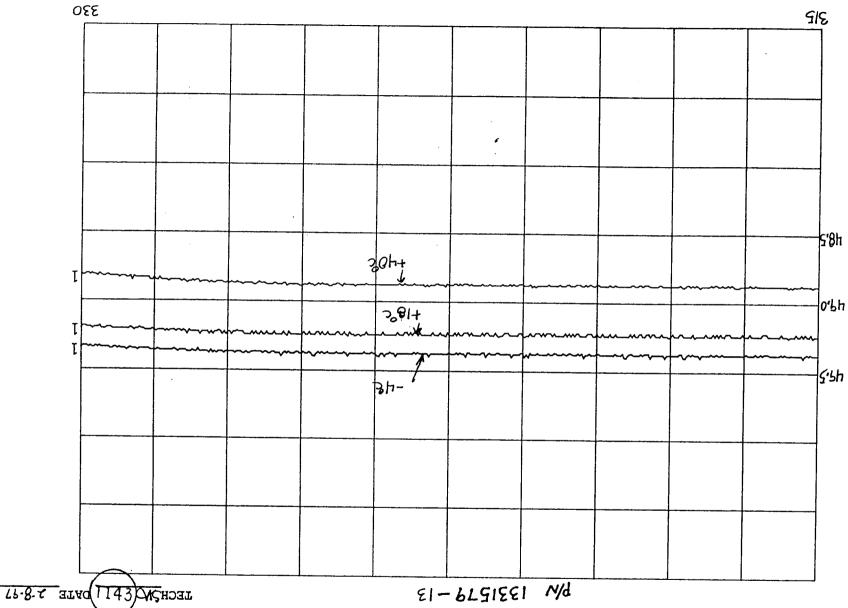
CSI: Male Upper (20)

Date: 2-19-97

NOTE: Review all recorded data and signify acceptance_below.

I: Mayou hours 2-10-97

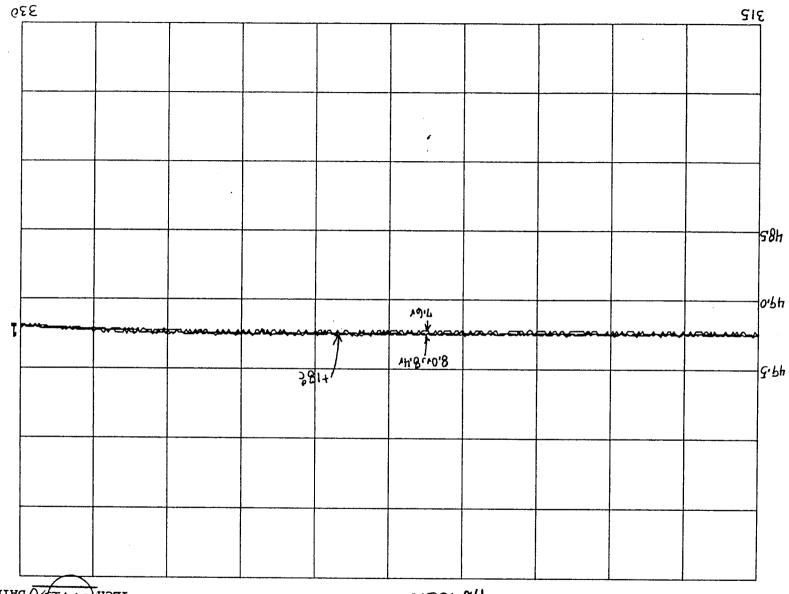
®Amplica, Inc.	1				
Newbury Park, CA 91320	SIZE	FSCM NO),	AMD1777	REV.
DRAWN	A	510		ATP1777	
ISSUED	SCAL	E		SHEET 37 OF 3	9



CAIN VS FREQUENCY
TEMPERATURE AS MOTED DEG.C.

WODER 07312307 S/N 107

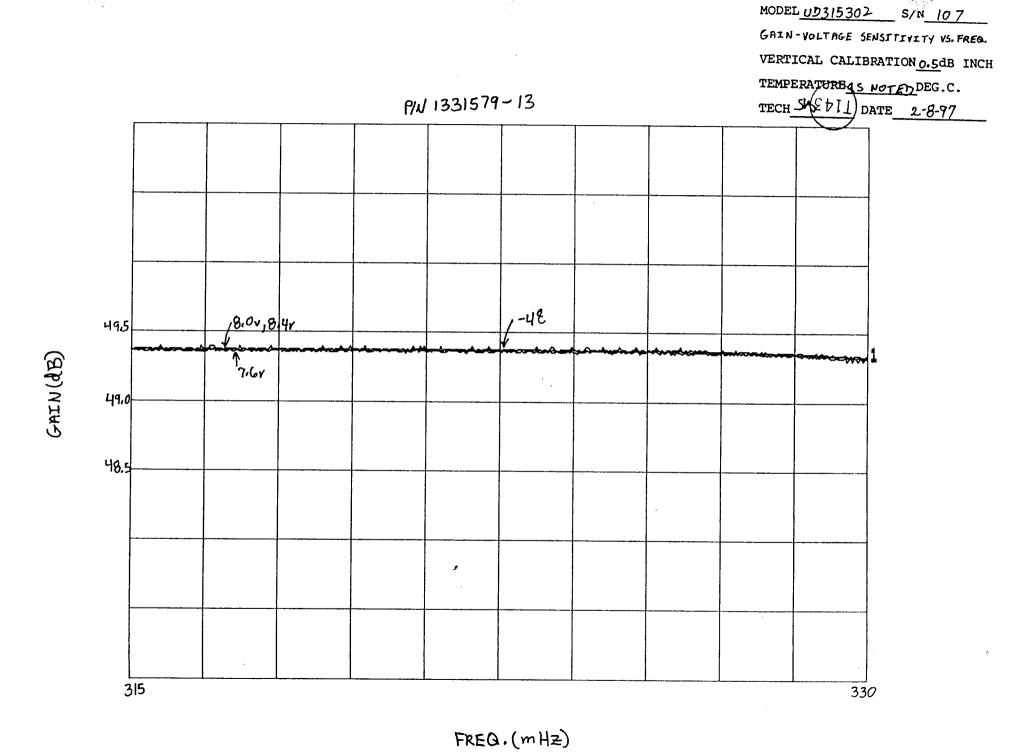
GAIN (dB)

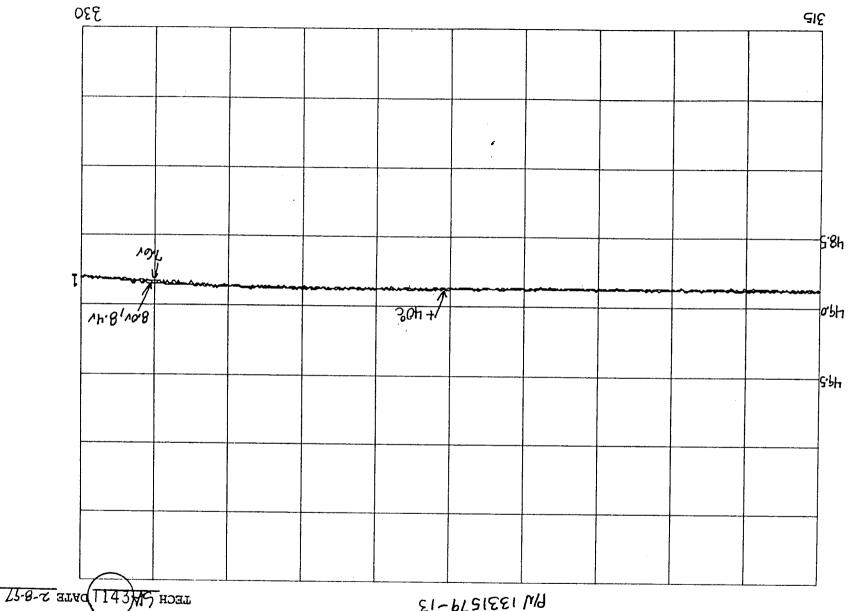


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E1-PT21EE1 WA

MODEL UD 315302— S/N 107
TEMPERATURE SENSITIVITY VS. FREG.
TEMPERATURE SENSITIVITY VS. FREG.
TEMPERATURE SENSITIVITY VS. FREG.





81-P721551 WA

TEMPERATURE S NOTED DEG.C. VERTICAL CALIBRATION 0.5dB INCH GAIN-YOLTAGE SENSITIVITY VS. FREG. WODEF (1) 312307 2/N 107

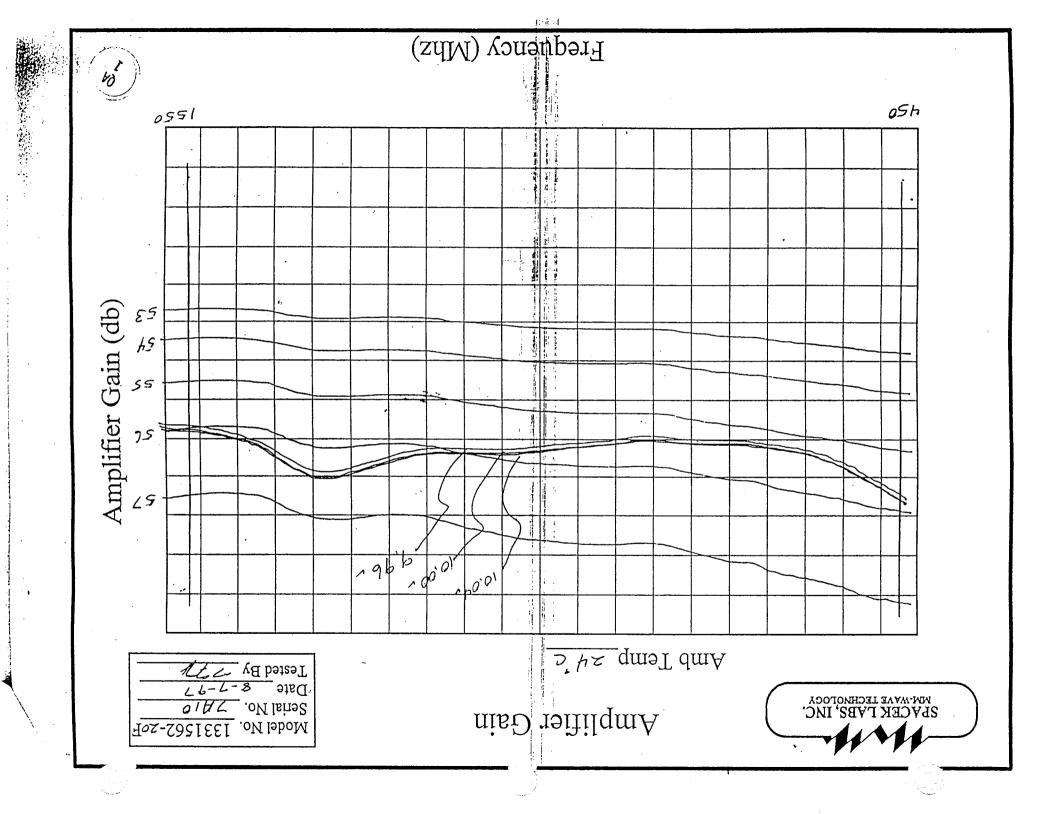
GAIN (&B)

Channel 15 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-20, S/N: 7A10)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST: ATP PA	ARAGRAPH 5.1.3	
GAIN FLATNESS SPEC. GAIN (dB)ppK (dB)ppK	FLATNESS ACC RE	ш _.
1.08 1.0		
	Chart	
CAIN VEDGIIG VOI TACE GENIG		D (CD) DYY
GAIN VERSUS VOLTAGE SENS	<u> 3111VII Y TEST: ATP PA</u>	<u> RAGRAPH 5.1.4</u>
AMPLIFIER GAIN	SPEC.	
VOLTAGE READING (dBm)	_ -	ACC REJ
10.04 56.10	1,872,0	OA
10.00 56.08		
9.96 55.95		
$\Delta Gv = 0.15 \text{ dB}$		-
		DATE ACC REJ
PART NO. <u>1331562- 20 F</u>	SPACEK QA	9 <u>-4-97</u> (QA)
SER NO	TEST FAILURE:	-
TESTED BY: 777	FAILURE ANALYSIS	NO
END DATE: 8-9-97		
END TIME: 1600	Spacek Labs 212 E. Gutie Santa Barba	errez St.



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 55.88			ر بستام د	
		• .014	0.035dB/°C /	QA	
T2 + 28	GT2 56,05			1	<u>L</u> .
		* .015	0.029dB/°C /	QA ·	
T3 + 8	GT3 56,35			1	
		* ,021	0.035dB/°C /	QA	
T4 -6	GT4 56,65			i	

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = G_{Ti-1}$$

$$\Delta G/\Delta T = G_{Ti+1}$$

$$i = 1,2,3,4$$

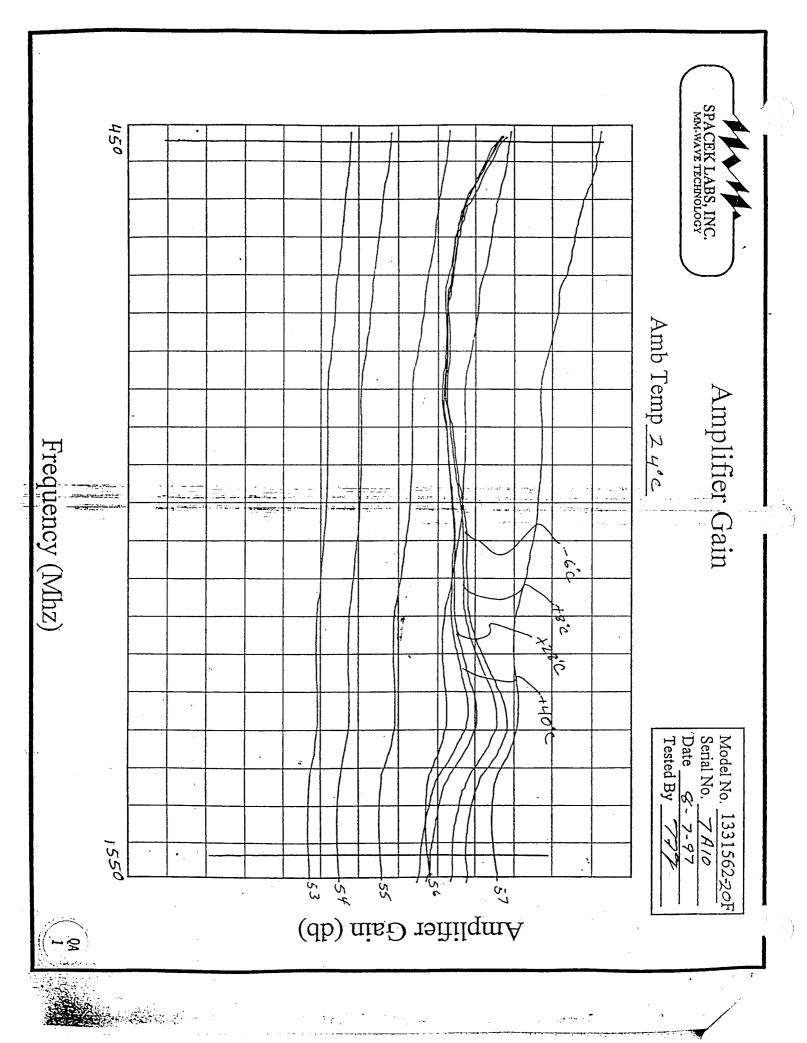
$$T_{i} - T_{i+1}$$

$$\Delta G = \frac{O.77}{dB}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = \frac{L32}{dB} \text{ Spec } 1.4dB$

/ QA	
ACC_1	REJ

	DAIL ACC RE
PART NO. <u>1331562-</u> 20 F	_ SPACEK QA 9- <u>5-97</u> 1
SER NO. <u>7A10</u>	TEST FAILURE:
TESTED BY:	FAILURE ANALYSIS NO
END DATE: 8-8-97	- · · · · · · · · · · · · · · · · · · ·
END TIME: 1600	Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara CA 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

~		~	**	
- 11	Λ			##
	$\boldsymbol{\Gamma}$	J.	п	Ħ

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC REJ
X X X X X X X X X	10				
X	20				
ХХ	50				
X X X X X X X X	100			_	
X ·	150				
X X X X X X	200	-			
X	400		· <u></u>		
X	500	-2.6	0,4	1.0	8~
X	1000	- 2.7	011	1.0	<u>8</u> .
X	1500	- 2.8	0,2	1.0	্ত্ৰ-
\$	h.j				`

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 8-7-77 AMBIENT ROOM TEMPERATURE °C: 2/

AMPLIFIER		The second secon	
OUTPUT	OUTPUT		AMPLIFIER
POWĘR	POWER	Y FACTOR	NOISE
AMBIENT (dBm)	(-77 K)(dBm)	(dB)	FIGURE (dB)
		_	
<u>-27.5</u>	<u>-30.Z</u>	2.7	2.04

Above data taken with Daden filter attached (except -19) .

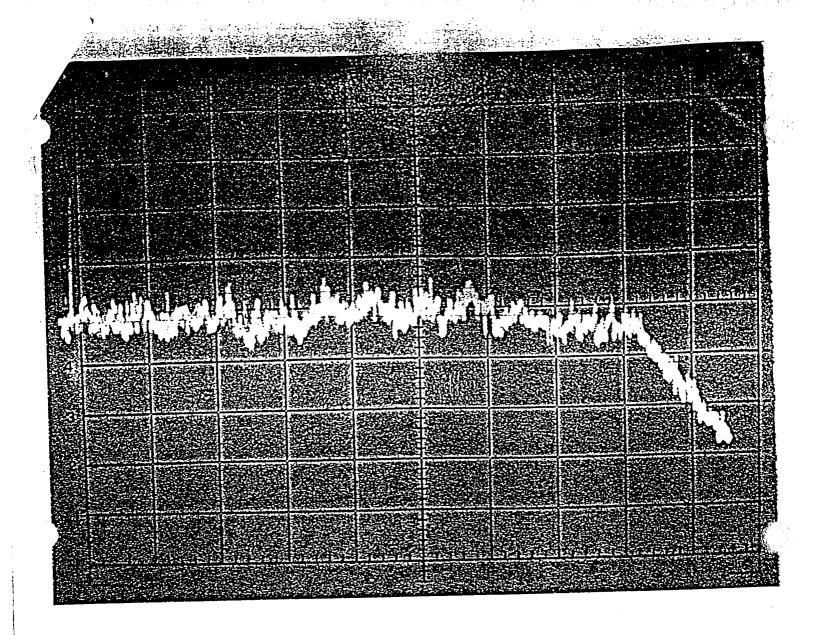
Intermediate test results for information only

PART NO. <u>1331562- 20 F</u>	SPACEK QA	8-8-97 S-
SER NO. 7A10	TEST FAILURE:	
TESTED BY: 77	FAILURE ANALYSIS	S NO
END DATE: 8-7-97		
END TIME: 1:30 pm	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE:	8-31-9/AM	BIENT ROOM	I TEMPERATI	JRE °C: + 2	<u>/</u>			
UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
<u>-6</u>	116	-27.00	-28.05	1.05	5.4	6.5	$\begin{pmatrix} J \\ O_V \end{pmatrix}$	
+8	116	-27,10	-28,15	1.05	5.4	6.5	<u> 1</u>	
+28	1/7	-27.20	-28.20	1:0	5.6	6.5	$\frac{1}{\delta_V}$	
+40	117	-27.50	-28,50	1.0	5.6	6.5	<u>, i</u>	
Noise fig	gure change_ Above data t	O.L dB Spe o be taken with	ec is .5dB peak the Daden filte	to peak on -20 r, except on th) AC ne -19 unit.	C OF	REJ	
ΝΕΔΤ-Ν	OISE POWE	ER STABILITY	TEST: ATP P	ARAGRAPH	<u>5.4.9</u> :			
Date: <u>9/</u>	/ <u>9/97</u> Amb	ient Room Tem	perature °C:2	25				
Attach c	omputer gene	erated <i>NE∆T</i> sp	readsheet to thi	s test data she	et.			
Record t	he calculated	Nps(K) from s	preadsheet data	a: 0,211	_			
Record I	Nps(K) O./ units if calcula	for dash num ted Nps(K) is le	nber from Aeroj ess than or equa	et specificational to specified I	n AE-24869 Nps(K), oth	, Table II. erwise reje	ct.	
			;		ACC R	EJ		
P	ART NO. <u>13</u>	31562-20F	_ SPAC	EK QA	<u>DATE</u> <u>A</u> 9 <u>-(0-9</u> 7	CC REJ		
S	ER NO	7A10	_ TEST	FAILURE:				
T	ESTED BY:	777	FAILURE	ANALYSIS	NO			
E	ND DATE:	9-9-97						
E	END TIME:	1600	2	pacek Labs, II 12 E. Gutierre anta Barbara,	z St.			



5.4.14 Noise Power Profile

Model No.: 1331562-20F

Serial No.: 7A10

Date: 9-10-97 Tested by: Dh

Spectrum Analyzer Parameters

Vertical Scale: 5 dB/div.

Scan Width:

100 mhz/Div.

IF Band Width:

10 Khz

Scan Time:

3 sec/Div.

No video filter.

SUBSYSTEM-LEVEL TEST DATA

ÿ		

CENTER FREQUENCY OF LOs

Channel No.	1	2	3	4	5	6	7	8	9-14 ***	15
Specification (GHz) * Setting Accuracy (+/-GHz)	23.8	31.4 0.008	50.3 0.008	52.8 0.003	53.596 0.003	54.4 0.003	54.94 0.003	55.5 0.008	57.290344 0.000086	89.0 0.08
Measured (GHz) **	23.798	31.400	50.301	52.799	53.597	54.400	54.940	55.501	57.290310 57.290322	88.983

^{*} Specification in vacuum condition.

^{**} Measured at ambient pressure (standard atmosphere).

^{***} Measured data for PLO No. 1 and No.2.

TEST DATA

FOR

AMSU-A2 (P/N: 1356441-1, S/N: F01)

19 V		
; ; ; ;		
	,	
		`

TEST DATA SHEET 3

LO Frequency Test Data (Paragraph 3.5.1) (A2)

Test Setup Verified:	AJuno	Baseplate Temperature (T _B)	23.3 0	'C
-	Signature			

Compo-	Channel	V _b (V)	l _b (mA)		P _{dc} (mW)		fa	(GHz)	
nent	No.			Required (Max)	Measured	Pass/ Fail	Required	Measured	Pass Fail
LO	1	10,01	78.2	2,000	782.8	P	23.800 · ± 0.008	23.798	P
	2	18.02	116.5	2,100	11673	7	31.400 ± 0.008	31.399	P
Mixer/ Amps	All	10.02	84.2	900	0.43.7				
TOTAL				5,000	2793.8				

Pass = P, Fail = F

Part No.: 135 644 1-1	Test Engineer: Tomy Lun a
Serial No.: FO	Quality Assurance: (892) MIR & '98
	Date: 3/6/98

		·	

Test Data with Spectrum Analyzer with Uncalibrated Message

Some of the AMSU-A receiver test data for the out-of-band rejection are plotted with UNCAL message on the Spectrum Analyzer screen but do not compromise the adequacy and accuracy of the data. This is assured by comparing the two attached data plots: one with calibrated (without UNCAL message) and the other with uncalibrated (with UNCAL message). The UNCAL message on the Spectrum Analyzer is a result of reduced sweep-time to reduce test time.

The IF bandwidth (RBW) of the Spectrum Analyze(HP 8566B) is an analog filter, so it consists R, L, C's that need some time to charge. The minimum sweep-time in the Spectrum Analyzer to show the calibrated display (without UNCAL message) is the minimum sweep-time for the IF filter to get charged by a sinewave signal. In the case where the stimulus signal is broadband noise as in our case or a signal that changes its amplitude slowly, like the response of a low-Q filter (a filter with a rise and fall-time much slower than those of the Spectrum Analyzer RBW filter) the sweep-time can be shorter. Therefore, the minimum sweep-time to get an accurate response can be decreased until there is a change in the display. If we test bandpass filters with similar characteristics, we can assume that the same minimum sweep-time can be used to test all of them. However, if the sweep-time is reduced too far beyond the limit, a change in the display will be observed.

ZH ØØE M8A HES BM 30 KHZ SWP 20.0 CENTER 100 MHZ ZHM QQZ NA92 Sø. Ø. Sec BWEFF LIWE /BP ØT MEAS UNCAL BD Q Natta mad 2.54- Par QM mab \sigma\:\\ \text{Pe-} FOR REFERENCE ONLY 3/1/40 M.9 gass Highertion crum. ATHO HERECHEST CON

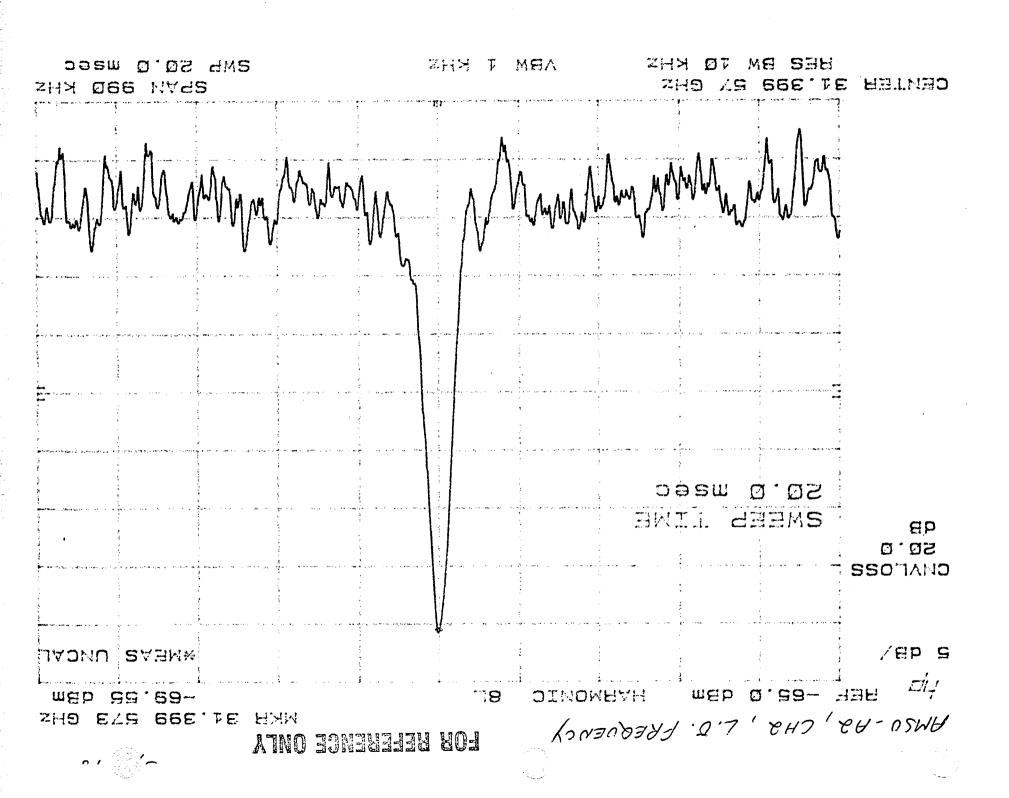
ABM T KHY

SWP 50.0 msec

ZHW GO.1 NA92

HES BM ID KHY

CENTER 23.798 42



TEST DATA SHEET 6
IF Output Test Data (Paragraph 3.5.2) (A2)

Test Setup Verified:_	Ce Func	Baseplate Temperature $(T_B)^{24}$ °C
• •	Signature	

Compo-	Channel	V _b (V)	I _b (mA)	P _o (dBm)	Atten (dB)	P _o (dBm)		
nent	No.					Required	Measured	Pas Fai
LO	1 ,	10,01	78,2	-27.70 -22.02	5.0	-27.0 ± 1.0	-22.02 -27.10	.A P
	2	/0,02	116.5	-23,45	3.0	−27.0 ± 1.0	-23.45 -26.4T -26.31	* P
Mixer/ Amps	All	10.02	84.2					

Pass = P, Fail = F

Part No.: 135 6441-1	Test Engineer: Jony Luna
Serial No.:F61	Quality Assurance: (12) MIR 9 '98
	Date: 3/6/98

TEST DATA SHEET 18

Temperature Sensor and Thermistor Test Data	(Paragraph 3.6.1)	(A2

Test Setup Verified:_	Ci Juno-	Baseplate Temperature (T _B) 23.6	°C
-	Signature		_ ~

Reference Designation	Specification	Measured V	alue	Pass/Fail
RT 12	2200 ± 100 Ω	2178	Ω	P
RT 19	2200 ± 100 Ω	2(77	Ω	P
RT 20	2200 ± 100 Ω	2176	Ω	P
RT 13	2200 ± 100 Ω	2177	Ω	P
RT 14	2200 ± 100 Ω	2181	Ω	P
RT 17	2200 ± 100 Ω	2183	Ω	P
TB 58	3000 ± 100 Ω	2990	Ω	P
TB 59	3000 ± 100 Ω	2987	Ω	P
TB 53	4.1 – 4.6 V	4.36	V	P

Pass = P, Fail = F

Part No.: 1356441-1	Test Engineer: Toncy Luna
Serial No.:	Quality Assurance: NAR 9 98
	Date: 3/5/98

Survival	TEST DATA SHEET 22 Heater and Thermal Switch Test Data (
Test Setup Verified: Sign	Baseplate Temperatur	e (Т _в) <u>23.7</u> °С

	Open Switch		Closed Switch		
Reference Designation	>10 MΩ	Pass/Fail	Specification	Measured Value	Pass/Fail
HR1/TS1	>100 M	P		57.1	P
	> 100M	P	50 - 65 Ω	57.0	P
HR2/TS2	7100M	P		57.7	P
	>100M	P		58.5	P

Pass = P, Fail = F

Part No.: 1356441-1	Test Engineer: Tony Luna
Serial No.:FOI	Quality Assurance: (268) MAR 9 '98
•	Date: 3/5/98

TEST DATA SHEET 23 (Sheet 3 of 3)
Bias Voltage Verification Test Data (Paragraph 3.6.4) (A2)

Test Setup Verified:	(Juno	Baseplate Temperature (T _B) 23.7 °C
-	Signature	

Reference Designation	Specification	Measured Value (V)	Pass/Fail
Mixer/IF AMP Ch 1, 2	+10 ±0.1	00,0]	P
DRO Ch 1	+10 ±0.1	10.01	P
DRO Ch 2	+10 ±0.1	[0.01 -	P

Test Engineer: MAR 9 '98 Quality Assurance: Serial No.:_

-			

TEST DATA

FOR

AMSU-A1-2 (P/N: 1356409-1, S/N: F01)

: :		
:		
	,	

TEST DATA SHEET 2 LO Frequency Test Data (Paragraph 3.5.1) (A1-2)

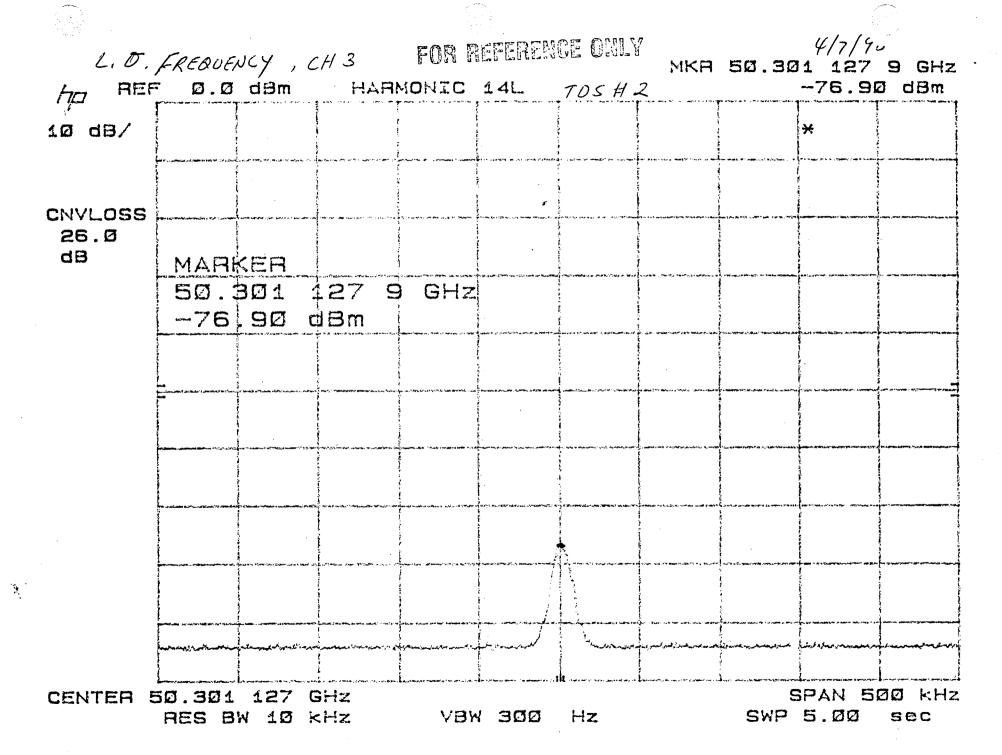
Test Setup Verified:_), Zung	Baseplate Temperature (T _B) 27.9 °C
•	Signature	

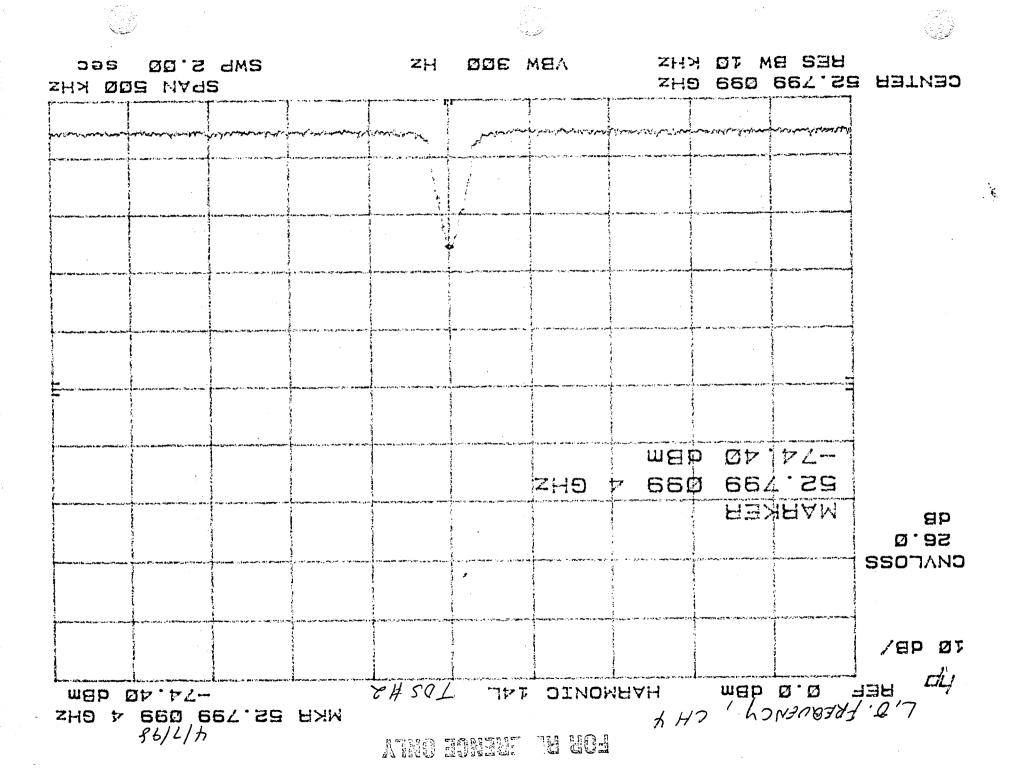
Compo-	Channel	ν _b (ν)	I _b (mA)	P _{dc} (mW)			f _o (GHz)		
nent	No.			Required (Max)	Measured	Pass/ Fail	Required	Measured	Pass Fail
	3	9,99	192.4	2,700	1,922.1	P	50.300 ± 0.008	50.301	P
LO	4	10.02	198.5	2,700	1,988.9	P	52.800 ± 0.003	52.799	P
	5	19,98	185.4	2,700	1,850.3	P	53.596 ± 0.003	53,597	P
	8	9.98	1955	2,700	1,951.1	ρ	55.500 ± 0.008	55,501	p
Mixer/ Amps	All	9,98	175,Y	[*] 1,800	1,750,5				
TO'	TAL			12,600	9,462.9				

Pass = P, Fail = F

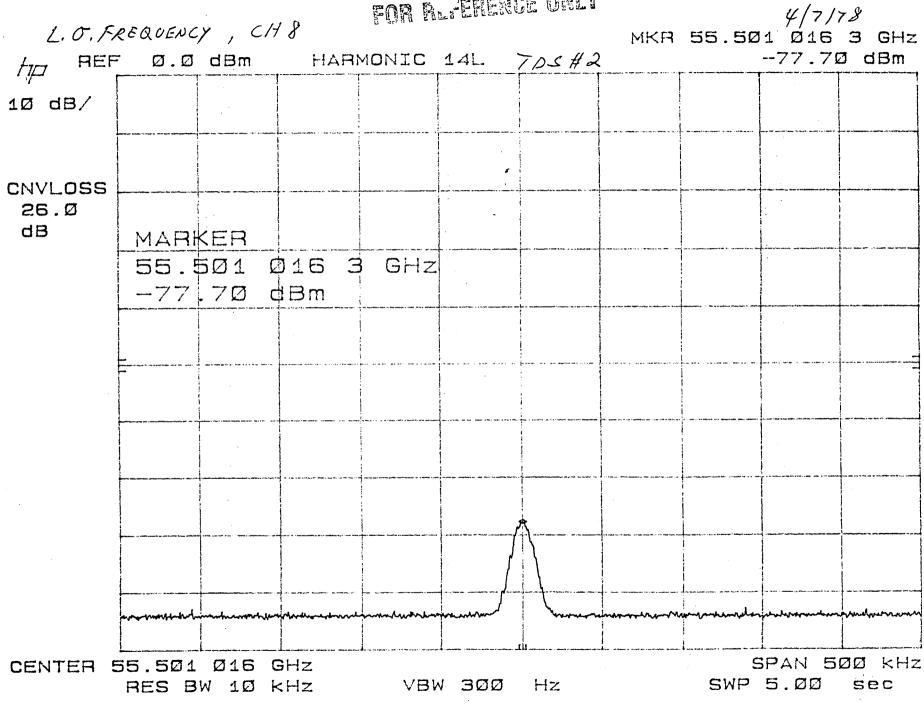
Part No.: 1356409-1	Test Engineer:
Serial No.:	Quality Assurance:
en e	Date: 4/7/98

	•		





FOR BL: ERENCE ONLY



TEST DATA SHEET 5 IF Output Test Data (Paragraph 3.5.2) (A1-2)

Test Setup Verified:	2. Zun	Baseplate Temperature (T _B)	28,200
•	Signature		

Compo-	Channel	V _b (V)	l _b (mA)	b(mA) Po(dBm)	Atten (dB)	P₀(dBm)		
nent -	No.		- ,			Required	Measured	Pass/ Fail
	3	9,99	192.4	-22.84	4.07	−27.0 ± 1.0	-26.91	P
·	4	10,02	198:5	-19,23	7.11	−27.0 ± 1.0	-26,34	P
LO	5	9,98	185,4	-19,16	7,12	−27.0 ± 1.0	-26.28	P
	8	9,98	195,5	-19.97	7.08	-27.0 ± 1.0	-27,05	P
Mixer/ Amps	All	9,98	175,4					

Pass = P, Fail = F

Part No.:	1356409-1	Test Engineer: hatte
Serial No.:	FOI	Quality Assurance:
		Date: 4/7/98

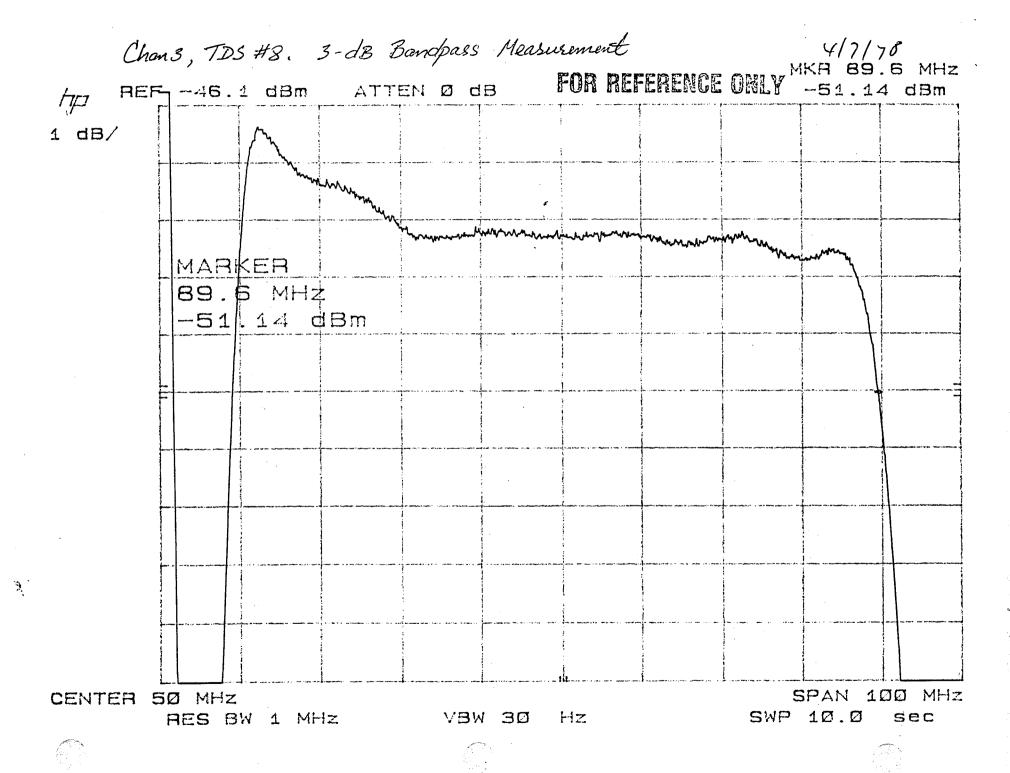
TEST DATA SHEET 8 (Sheet 1 of 2)

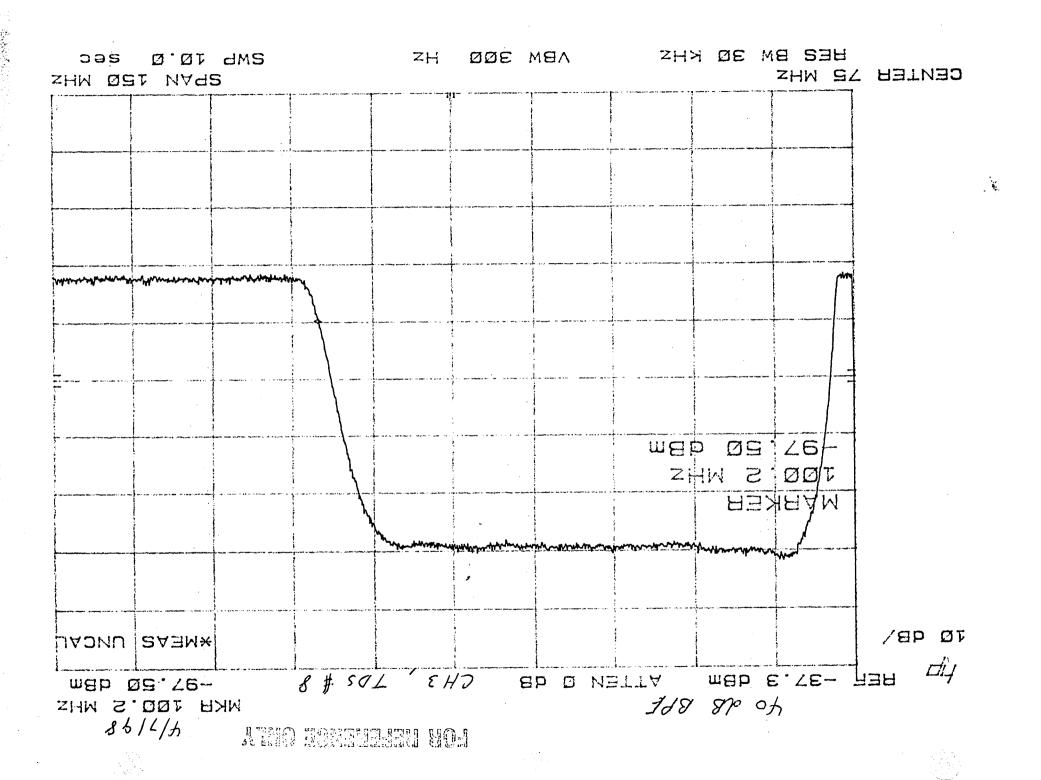
			anopass C	naracteristics 1	est Data (Paragrap	on 3.3.3) (A1-2)		
Test Setu	p Verified			Basep	late Temperature	(T _B) <u>28.2</u> °C		
	٠. •		gnature					
Сотро-	Channel	V _b (V)	I _b (mA)		Frequency 1Hz)	3 dB BW F (Mi		Pass/ Fail
nent	No.		-	Lower	Higher	Required Max.	Measured	
Y 1	3	9.99	192.4	9.0	89.6	186 9 ()	80. 6	P
	4	10.02	198.5	7.8	199.2	180' 20 O	191.4	P
LO	5	9.98	1854	31.6	201.2	170	169.6	P
	8	9.98	195.5	7.6	164.8	·330 /6 3	157.2	P
Mixer/ Amps	Ail							
	: 							
	35 FO		-/		Test Engineer: Quality Assura Date: 04			

TEST DATA SHEET 8 (Sheet 2 of 2)

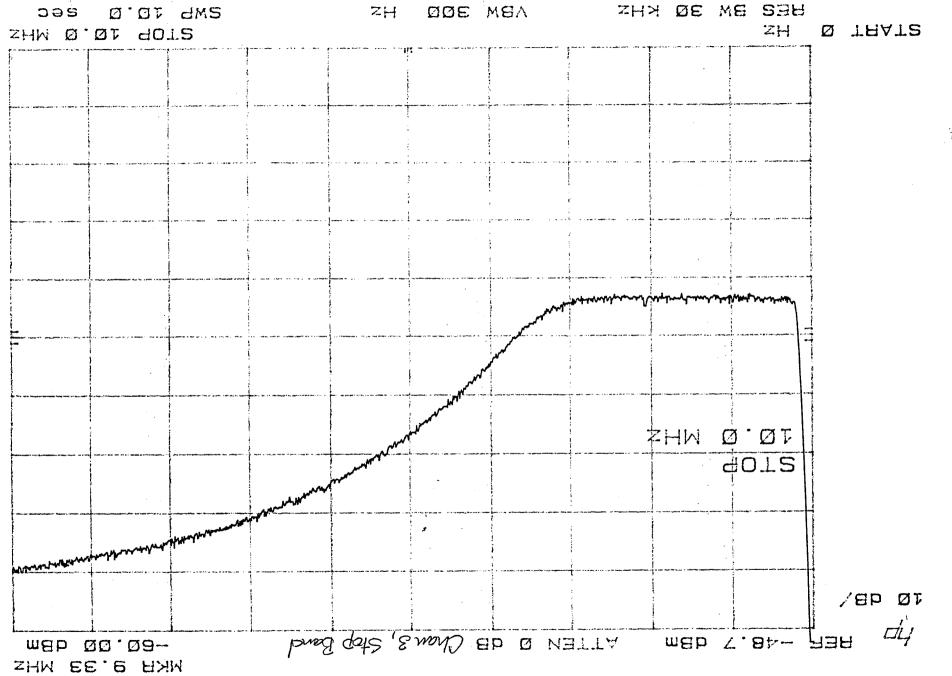
Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-2)

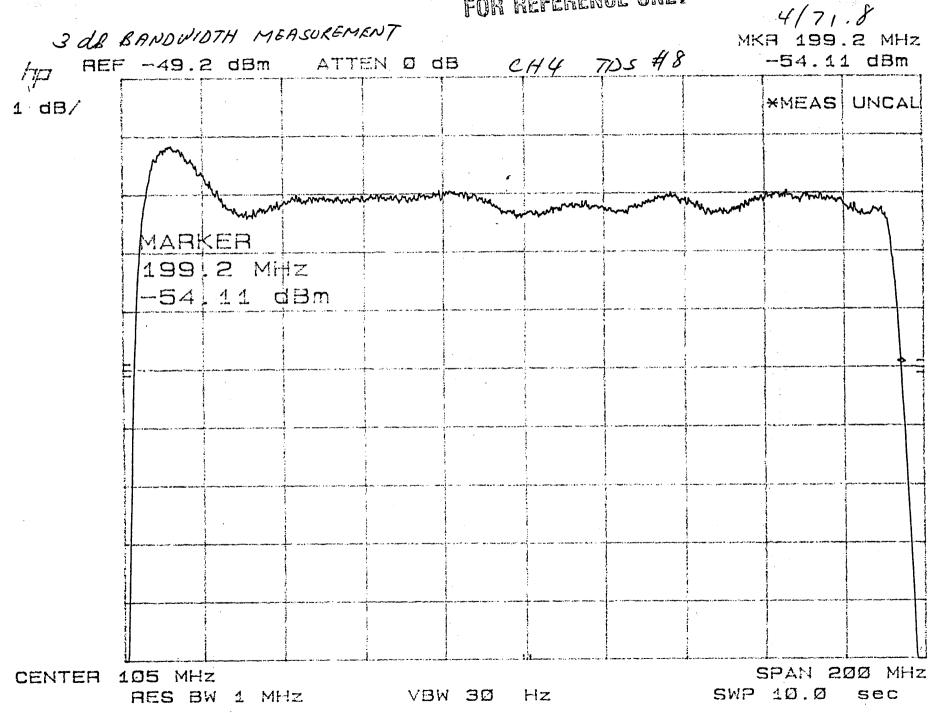
		. В	andpass (Characteristics Te	st Data (Paragrap	n 3.3.3) (A1-2)		
Test Set	Test Setup Verified: 7 200 Baseplate Temperature (T _B) 28,3 °C QC 3/30/90 Signature							
Compo-	Channel	V _b (V)	I _b (mA)	40 dB BW I (Mi		40 dB BW (M	Frequency Hz) (REF.C.NC)	Pass/ Fail
-	No.	AP(A)	יייום,	Lower	Higher	Required Max.	Measured	
nent •		9,99	192,4	3,8	100.2 222.3 7.25	For Reference out of 234	219.8 2.7m	PP
	4	10.02 9.98 7.203	198,5	2,5	222.3	, 234 -	219,8	P
LO	5	9.98	185.4	19,3	217,3	-221	198.0	P
	8	9.98	195,5	2,4	181,0	429-	178,6	P
Mixer/ Amps	Αll	9,98	175.4					
Part No.	: <u>/3</u> \ o.:	5640 F0	7-1		Test Engineer Quality Assur	ance:	the .	
Part No. Serial N	: <u>/3</u> \ o.:	5640 F0	9-1 1		Quality Assur		the .	

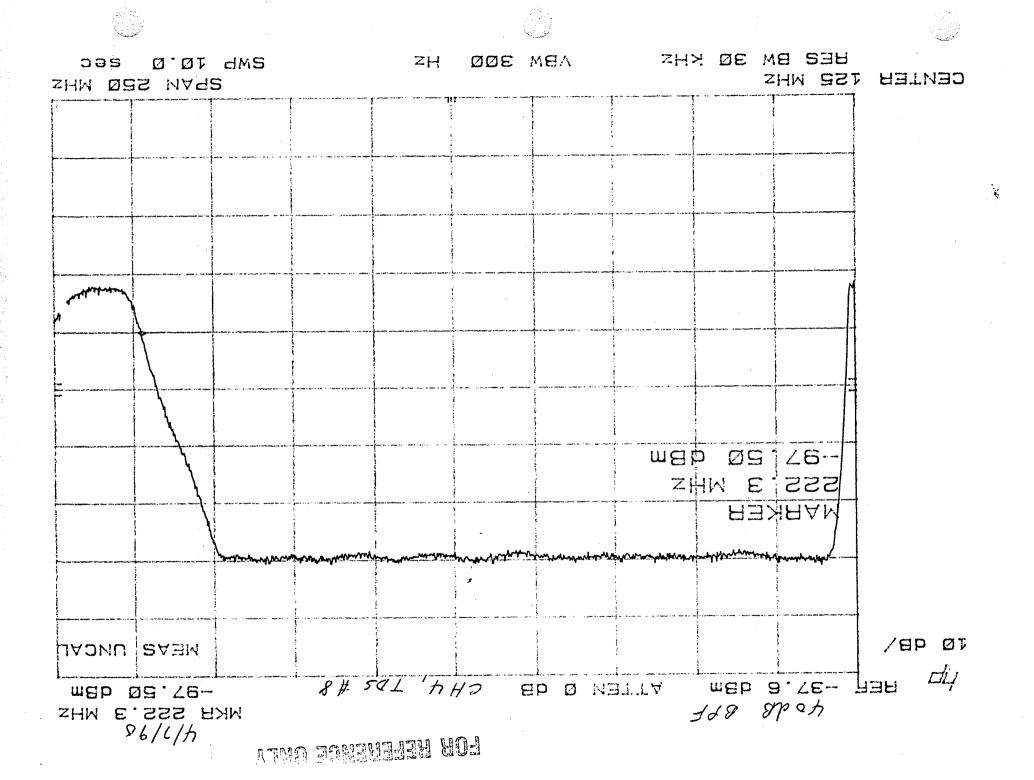


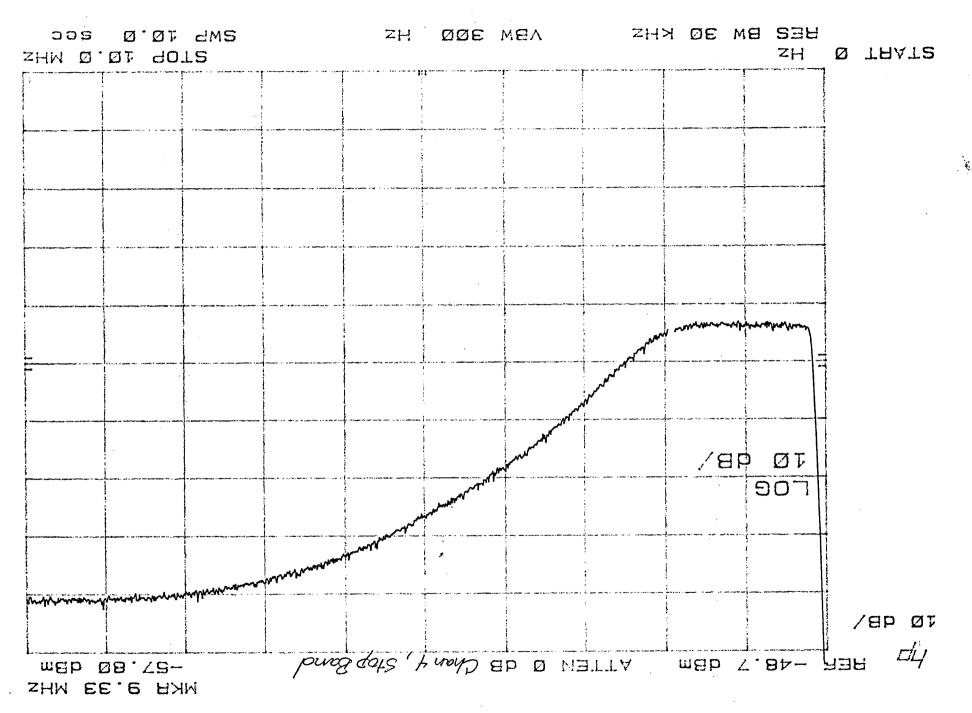


LOW WELENCE ONLY 1/198

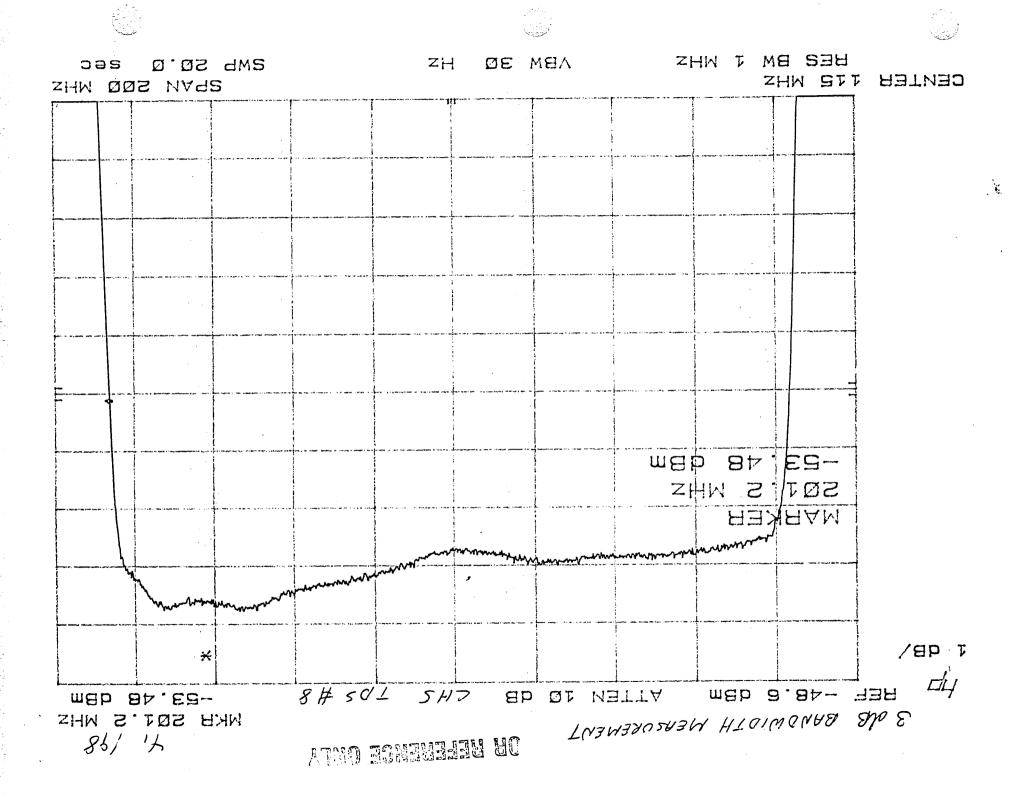


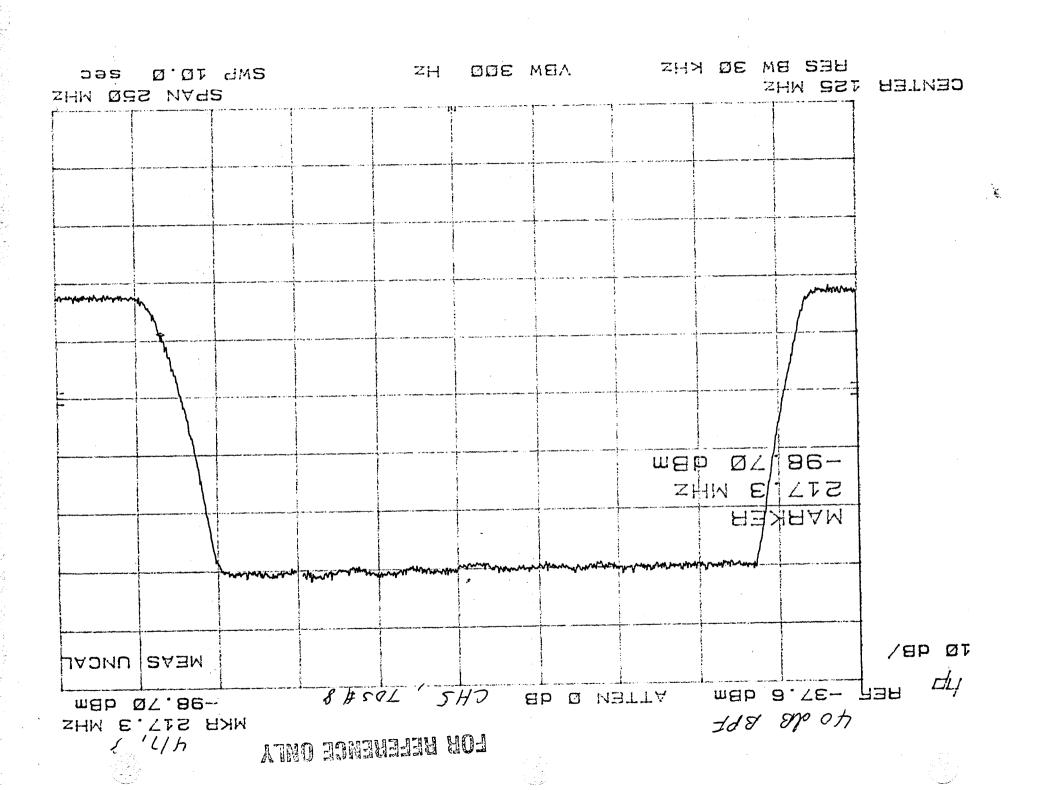


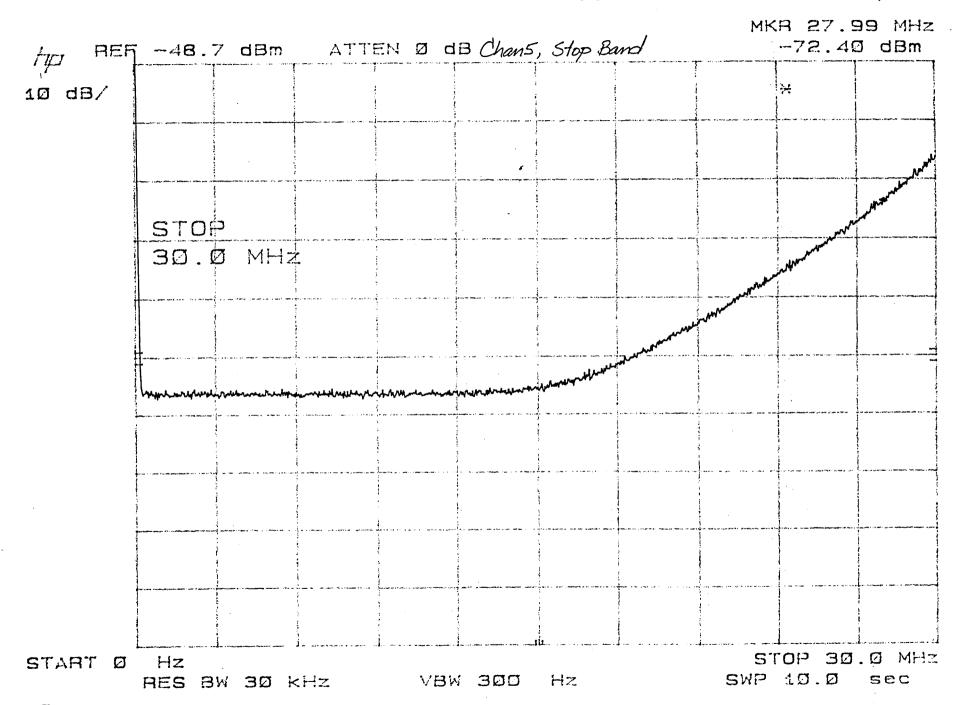


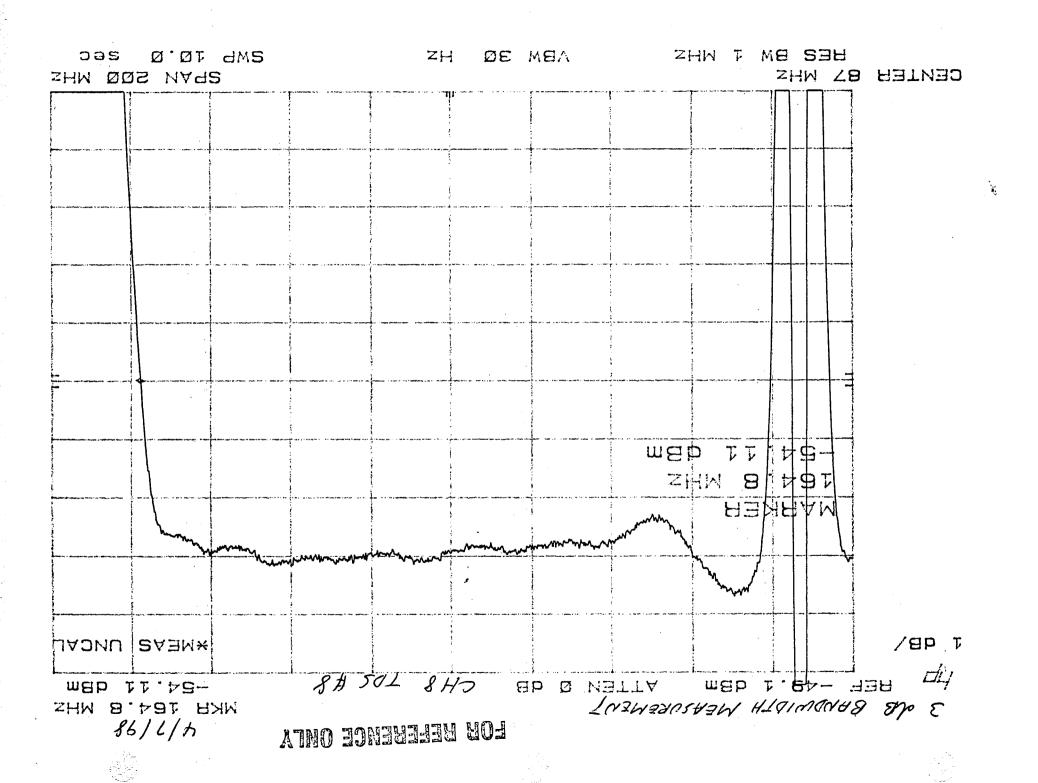


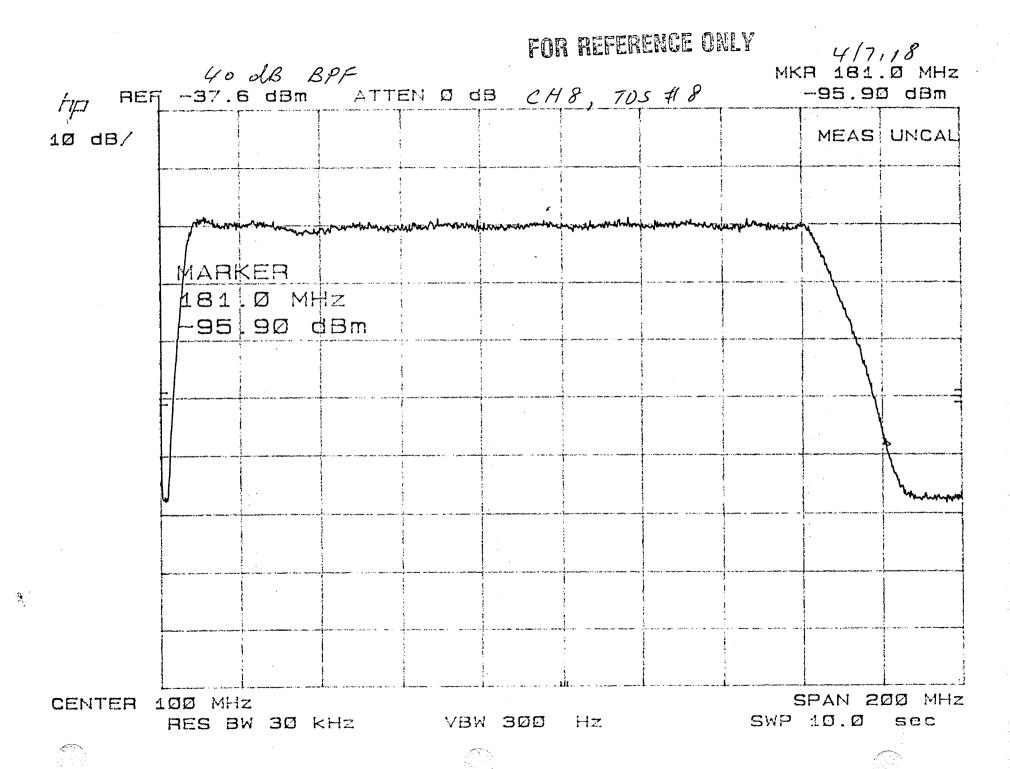
LOW DEFENCE ONLY 4/8



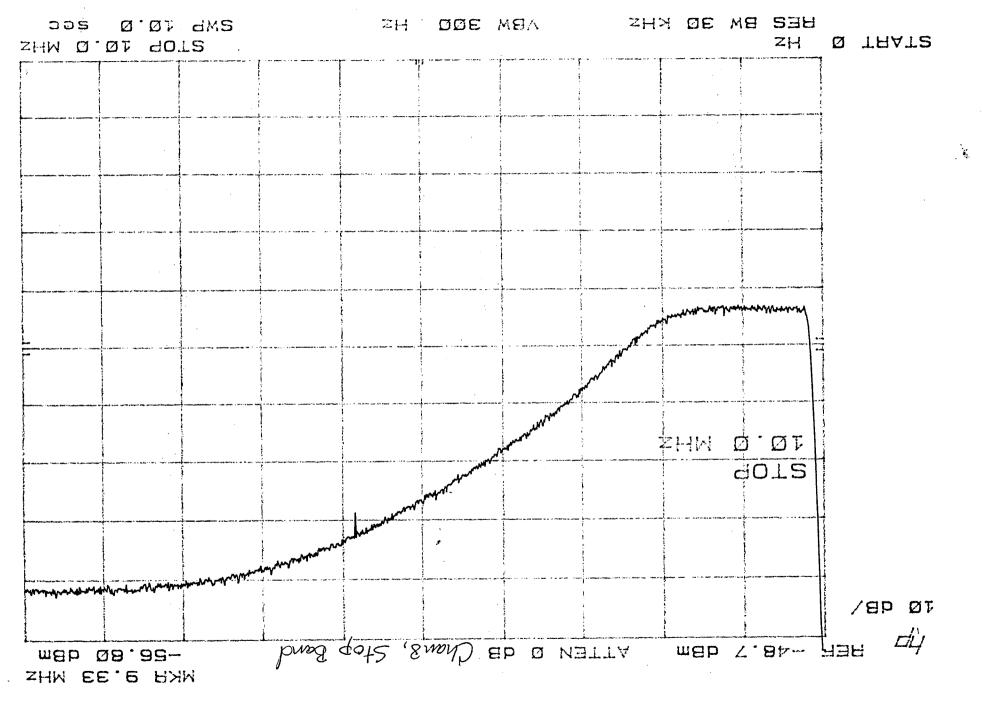








EON REFERENCE ONLY 1/98



TEST DATA SHEET 10 (Sheet 1 of 10)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

st Setup Ve	rified:	7 Jun Signati	J ure	Baser	olate Tempe	erature (T _B)	28,3°C	:	
Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation
				23,0	-0,949	.00041	-194.0	-0.695	.00025
				23,0	-0,947	0,00035	-194.0	-0,693	.00024
	*							-0-693	
2	3								
LO	£ 3	9,99	192.4						
	3	1							
Mixer/ Amps	All	9,98	175.4						
IF Amps	All		NA					OR 7111	

RECEIVER SHELF (A1-2),

Part No.: 1356409-1	Test Engineer:
Serial No.:F0/	Quality Assurance:
	Date: 4/7/98



58

TEST DATA SHEET 11 (Sheet 3 of 6) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-2)

Test Setup Verified: Baseplate Temperature (T _B) <u>28.3</u> °C										
• •		· · ·	· . ·			2				
		NF (dB)				-	NPS (K)		
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Raquired ax)	Meas	1	Average	Delta	Pass/Fail
3	¥4.25	4.42			3					
		4.41								
		4,43								
							_	Transfer in		
		V						Halbernegg		
								Aphani e maneri e e e e e e e e e e e e e e e e e e		
							 -	Minimum via		
							_			
	die									
	5.2		4,42	P	(72)					
NP	S IS NO THIS D QUIRES	T REQUI	RED PE	R PROGR	AM MAN) AGER	0/	EFICER.	Pass = P,	Fail = F
FOR	THIS	RECEIVE I	R SHELF	(A1-2),	(PMO	-) AK	D	NF	•	
REG	QUIRES	TORUN	THRE	E TIME	٠ ک					
,	135				Test Engine	er:	2	the		
Serial No).:	FO1			Quality Ass					
					Date:		198	>		
					Date	//				•
										



FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-2, CH3, S/N F01, NF & NPS TEST DATA 4/7/98

SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.15	94888847	.00041257		
2	COLD TEST	79.15	69470506	.00024515	4.42820024	.27103242
3	WARM TEST	296.15	94716644	.00035019		
4	COLD TEST	79.15	69258614	.00024142	4.41342336	.19707730
5	WARM TEST	296.15	94679107	.00034530		
6	COLD TEST	79.15	69338616	.00025242	4.43194024	.19170404
7	WARM TEST	0.00	0.00000000	0.00000000		
8	COLD TEST	0.00	0.00000000	0.00000000	Ø.ØØØØØØØØ	0.00000000
9	WARM TEST	. 0.00	0.00000000	Ø.ØØØØØØØØ		
10	COLD TEST	0.00	0.00000000	Ø.ØØØØØØØØ	0.00000000	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000	~-~ <u></u>	
12	COLD TEST	0.00	0.00000000	0.00000000	Ø.ØØØØØØØ	0.00000000
13	WARM TEST	0.00	0.00000000	0.00000000		
14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM TEST	0.00	0.00000000	0.00000000		
16	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	Ø.ØØØØØØØ
17	WARM TEST	0.00	0.00000000	0.00000000	~ -	
18	COLD TEST	0.00	0.00000000	0.00000000	Ø.ØØØØØØØØ	0.00000000
19	WARM TEST	0.00	0.00000000	0.00000000		
20	COLD TEST	0.00	0.00000000	Ø.00000000	0.00000000	0.00000000

CH. 3 ,78.6 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.42452863676

NOISE POWER STABILITY (K) = .219937919368

NOISE POWER STABILITY DELTA (K) = .0793283796871

 $NPS_MAX (K) = .271032417347 NPS_MIN (K) = .19170403766$

INTEGRATION TIME = .165

Т	est Setup Ve		$\overline{}$	and Noise	e Power St	ability Test		が raph 3.5.4) (. <u> </u>		
	Compo- ment	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation
					23,0	-1.164	,00023	-194.0	-0,804	.00016
					1	1	4		-0,804	1
		*,			23.0	-1.162	,00020	-194.0	-0.804	00017
		*4 &								
	LO	E.	10.02	198,5						
			10,00	7 (0,-						
	·	,								
	-									
	Mixer/ Amps	All	9,98	175.4						
	IF Amps	All	1	N/A	100 TO 10					
	NF REQUIRES TO RUN ONLY THREE TIMES FOR THIS									
	RECEIVER SHELF (A1-2),									
P	art No.:	13564	09-1	<i>.</i>		· Test Er	ngineer:	This	<u> </u>	
s	erial No.:	Fo) /			Quality	Assurance		<u> </u>	
						Date:_	4/	7/98		



TEST DATA SHEET 11 (Sheet 4 of 6)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-2)

Test Sett	p Verified:_	7. 21 Signa	ature	Basepla	te Temperatu	ие (Т _в) <u>До</u>	<u>°,3 °</u> c		
				·	· · · · ·	· · · · · · · · · · · · · · · · · · ·			·.
Channel	Required	NF (dB)		Required	T	NPS (K)	T	
No.	(Max)	Measured	Average	Pass/Fail	(Max)	Measured	Average	Delta	Pass/Fail
4	4.25	3.80			0.08				
		3.80							
		3,81							
		\							
·									
						•			
	; !								
					1.				
	513	/造	3,80	ρ	168				
				/		1			
		T REQUI							Fail = F
		TIMES		.) 411-0	141 1	0, - 1 - 1	•		
•	Part No.: 1356409-1 Test Engineer: The Hold								
	/				Quality Assu	•			
-					Date:	4/7/9	8		
~ <u>~~~~</u>				•	٠.	. , ,			

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-2, CH	44, S/N FO	1. NF & NPS	TEST DATA	4/7/98	
SEQ TEMP_TEST			STD_DEV	NF (dB) NPS(K)
1 WARM TEST 2 COLD TEST		-1.16355405 80385109	.00022730 .00015508	3.8008249	93 .05643689
3 WARM TEST 4 COLD TEST	296.15	-1.16297236 80384988	.00020471	3.805710	
5 WARM TEST	296.15	-1.16229681	.00020491		
6 COLD TEST 7 WARM TEST		80353729 0.00000000	.00016810 0.0000000	3.807594	82 .01744914
8 COLD TEST	0.00	0.00000000	0.00000000	0.000000	0.00000000
9 WARM TEST 10 COLD TEST		0.00000000 0.00000000	0.00000000 0.00000000	0.000000	
11 WARM TEST 12 COLD TEST		Ø.ØØØØØØØØ Ø.ØØØØØØØØØ	0.00000000 0.00000000	0.000000	
13 WARM TEST	0.00	0.00000000 0.00000000	0.00000000 0.00000000	0.000000	 00 0.0000000
15 WARM TEST	0.00	0.00000000	0.00000000		
16 COLD TEST		Ø.ØØØØØØØØ Ø.ØØØØØØØØ	0.00000000 0.00000000	، فت سر باب دید بید بید بید بید	
18 COLD TEST		0.00000000 0.00000000	0.00000000 0.00000000		00 0.000000000
	0.00	0.00000000	0.00000000		00 0.00000000
CH. 4 ,191.2	MHz M	Hz			
NOISE FIGURE	AVERAGE (dB) = 3.80	04710945		
NOISE POWER S					
NOISE POWER S	STABILITY	DELTA (K) =	.03898	77466588	
NPS_MAX (K) =	- .	0564368880512	NPS_	MIN (K) =	.0174491413924

INTEGRATION TIME = .165

st Setup Ve	rified:	Signat	ure	Base	plate lempe	erature (1 _B)	<u>28,3 °</u> 0																				
Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standar Deviation																		
				23,0	-1.192	,00025	-194.0	-0.865	,0002																		
				23,0	-1.192	.00023	-194.0	-0.864	,0002																		
	×			23,0	-1.191	.00023	-194,0	-0.864	,0002																		
	*5 to																				·						
LO	£	0.00	, 000																								
		9,78	9,78	7.78	7.70	7.10	7,10	7.10	7.70	7.70	1,98 185.4																
Mixer/ Amps	All	9,98	175,4																								
IF Amps	All	N/A	N/A					e THIS																			

Part No.: 1356409-1	Test Engineer:
Serial No.:FO [Quality Assurance:
	Date: 4/7/98



TEST DATA SHEET 11 (Sheet-8 of 5)
d Noise Power Stability Test Data (Paragraph 3.5.4) (A1-2)

Test Setu	p Verified:_	7, 7 Signa	my	Baseplat		ие (Т _В) <u>2</u> §	<u>;3</u> °c .		
	••	Signa	ii.iii.e						
	·	- NF(dB)			·.	NPS (K)		- ₁
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
5 (4.25	4,32			1000				
		4.32							
		4.33	X						
		 							
		\							
		X			respective and the second				
		-							
		-			¥				
	5/2	7100-02-02-100-100-1			1				
	5.2		4.32	P	1.08				
NPS	- 15 11	T REQUI	RED DA	R (PM	10) FO	& THIS		Pass = P,	Fail = F
REC	CEIVER -	SHELF	(A1-2) AND	NFX	EQUIRE	STORU	אני	
ON	LY THA	REE TII	MES.				7/1	-	
Part No	.: <u>/35</u>	6409-	/	·	Test Engi	neer:	Bush	ky	
Serial N	To.:	0/			Quality A	ssurance:	, D	·	
					Date:	4/7/	198		
				·					

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-2, CH5, S/N F01, NF & NPS	TEST DATA	4/7/98	
SEQ TEMP_TEST TEST TEMP VOLTAGE			NPS(K)
1 WARM TEST 296.15 -1.19228008 2 COLD TEST 79.1586490170	.00024856 .00019625	4.31997157	.06947215
3 WARM TEST 296.15 -1.19177576	.00022671		
4 COLD TEST 79.1586434009	.00025831	4.31735393	.01677624
5 WARM TEST 296.15 -1.19073567	.00022783		
6 COLD TEST 79.1586438452	.00026985	4.32805357	.02341029
7 WARM TEST 0.00 0.00000000	0.00000000	2 222222	0.0000000
8 COLD TEST 0.00 0.00000000	0.00000000	0.0000000	0.00000000
9 WARM TEST 0.00 0.000000000 10 COLD TEST 0.00 0.000000000	Ø.ØØØØØØØØ Ø.ØØØØØØØØ	0.0000000	0.00000000
, 0	0.00000000		
11 WARM TEST 0.00 0.000000000 12 COLD TEST 0.00 0.000000000	0.00000000	0.00000000	0.00000000
13 WARM TEST 0.00 0.00000000	0.00000000		
14 COLD TEST 0.00 0.00000000	0.00000000	0.00000000	0.00000000
15 WARM TEST 0.00 0.00000000	0.00000000		
16 COLD TEST 0.00 0.00000000	0.00000000	0.00000000	0.00000000
17 WARM TEST 0.00 0.00000000	0.00000000		
18 COLD TEST 0.00 0.000000000	0.00000000	0.00000000	
19 WARM TEST 0.00 0.00000000		0.0000000	
20 COLD TEST 0.00 0.00000000	Ø.ØØØØØØØØ	0.00000000	0.00000000
CH. 5 ,169.6 MHz MHz			
NOISE FIGURE AVERAGE (dB) = 4.33	2179544445		
NOISE POWER STABILITY (K) = .038	65528959143		
NOISE POWER STABILITY DELTA (K) =	.052695	59163006	
NPS_MAX (K) = .0694721549408	6 NPS_M	1IN (K) = .01	577623864
INTEGRATION TIME = .165			



TEST DATA SHEET 10 (Sheet 2 of 10)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-2)

est Setup Ve	erified:	Signati	ire -	Base	plate Tempe	erature (T _B)	<u> </u>		
Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C	(V) Standard Deviation
				23,0	-,982		-194.0		,00:23
				23,0	-,982	.00018	-194.0	692	.00027
	7			23.0	-,983	.00022	-194.0	692	,00023
	785								
LO	5	9.98	1005						
		9,98	1730						
				·					
Mixer/ Amps	All	9,98	175,4						
IF Amps	All	N/A	 						
NF RE	FRUIRES VER SI	70/	RUN	ONZY	THRE	E TIM	ES FOR	THIS	
						ngineer:	71.5	th	
	13564 F0		,			y Assurance	•		
.iai 190.:		·			_	4/7			
	· · · · · · · · · · · · · · · · · · ·				X	(Q) (_	



TEST DATA SHEET 11 (Sheet & of &)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-2)

Test Sett	ıp Verified:_	7. 7. Sign:	ature	Basepla	e Temperatu	rie (T _B) <u>28</u>	<u>,3</u> ℃		
•				·.					
			(dB)				NPS (K)		
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
8 (4.25	4,00			0.08				
		4.00							
		3,99							
	•								
	e.				-				
	1.	V			·				
	•	/\							
						•			
		/							
	5.13		4,00	P	108				
NPS	15 NOT	REQUI	RED P	ER (p)	Mo) F	OR TH	115	Pass = P,	Fail = F
RECE	IVER SI	HELF (A1-2)	ANI	NF RO	EQUIRE-	S 70		
		THREE					. , , ,	/	
		3564.09	-/		Test Engine	er:	Life	<u> </u>	
Serial No.		FOI			Quality Assu	ırance:	<u> </u>	-	
					Date:	4/7/90	8	<u> </u>	
					-1 /				



AMSU-A TEST

AMS	J-A1-2, CH8	3, S/N FØ1	, NF & NPS	TEST DATA	4/7/98	
				STD_DEV .00020662		NPS(K)
1 2	WARM TEST	296.15 79.15	98177514 69144305	.00023293	3.99523560	.05436992
3	WARM TEST	296.15	98178351	.00017980		
4	COLD TEST	79.15	69203966	.00027044	4.00415525	.05334157
5	WARM TEST	296.15	98277137	.00022187		
6	COLD TEST	79.15	69201334	.00023117	3.99325676	.08090377
7	WARM TEST	0.00	0.00000000	Ø.ØØØØØØØØ		
8	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	Ø.ØØØØØØØØ
9	WARM TEST	0.00	0.00000000	0.00000000		
10	COLD TEST	. 0.00	0.00000000	0.00000000	Ø.00000000	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	0.00000000	0.00000000		0.00000000
13	WARM TEST	0.00	0.000000000	Ø.90000000		
14	COLD TEST	0.00	0.00000000	0.00000000		0.00000000
15	WARM TEST	0.00	0.00000000	Q.QQQQQQQQ		
16	COLD TEST	0.00	0.00000000	0.00000000		0.00000000
17	WARM TEST	0.00	0.000000000	0.00000000		0.0000000
18	COLD TEST	0.00	0.00000000	0.00000000		0.00000000
19	WARM TEST	0.00	0.00000000	0.00000000		0.0000000
20	COLD TEST	0.00	0.00000000	0.00000000	0.0000000	0.00000000
сн.	8 ,156.2	MHz MH	łz			
NOI	SE FIGURE	AVERAGE (c	IB) = 3.99	755179373		
NOI	SE POWER S	TABILITY (K) = .062	18717556138		
NOI	SE POWER S	TABILITY D	ELTA (K) =	.02756	22014672	

.0809037731728 NPS_MIN (K) = .0533415717056

INTEGRATION TIME = .165

NPS_MAX (K) =

TEST DATA SHEET 17

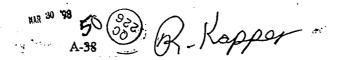
Temperature Sensor and Thermistor Test Data (Paragraph 3.6.1) (A1-2)

Test Setup Verified: 2. Vimb	Baseplate Temperature (T _B) <u>26.0</u> °C
Signature	

Reference Designation	Specification	- Measured Val	ue -	Pass/Fail
RT 41	2200 ± 100 Ω	2173	Ω	Pass
. RT 42	2200 ± 100 Ω	2173	Ω	Pass
RT-43	2200 ± 100 Ω	2176	Ω	Pass
RT 44	2200 ± 100 Ω	2171	Ω	Pass
. RT 12	2200 ± 100 Ω	2170	Ω	Pass
RT-17	2200 ± 100 Ω	2171	Ω	Pass
RT 18	2200 ± 100 Ω	2176	Ω	Pass
RT 19	2200 ± 100 Ω	2/73	Ω	Pass
RT 22	2200 ± 100 Ω	2172	Ω	Pass
RT 33	2200 ± 100 Ω	2174	Ω	Pass
TB 58	3000 ± 100 Ω	2994	Ω	Pass
TB 59	3000 ± 100 Ω	2998	Ω	Pass
TB 54	4.1 – 4.6 V	4.35	V	Pass

Pass = P, Fail = F

Part No.: 1356409-1	Test Engineer: 2 Sinh
Serial No.: Fol	Quality Assurance:
	Date: 04/8/98



TEST DATA SHEET 21

Survival Heater and Thermal Switch Test Data (Paragraph 3.6.3) (A1-2)

Test Setup Verified: Signature	Baseplate Temperature (T _B)	26.0	_°C

	Open S	Switch	Closed Switch			
Reference Designation	>10 MΩ	Pass/Fail	Specification	Measured Value	Pass/Fail	
HR1/TS1	> 100M2	Pass		4452	Pars	
5 A	> 100 MQ	Pars	40 - 48 Ω	44.42	Pass	
HR2/TS2	>100MQ	Pass		43.5.52	Pass	
	7100MQ	Pass		43.5_5_	Pass	

Pass = P, Fail = F

Part No.: 1356409-1	Test Engineer: Y. Vrink
Serial No.: Fol	Quality Assurance:
	Date: 04/8/98

MAR 30 98 54 000 B. Kappay

TEST DATA SHEET 23 (Sheet 2 of 3) Bias Voltage Verification Test Data (Paragraph 3.6.4) (A1-2)

Test Setup Verified: Y. Yrink	Baseplate Temperature (T _B) <u>L</u> 4 °C
Signature	

Reference Designation	Specification	Measured Value (V)	Pass/Fail
Mixer/IF AMP Ch 3, 4, 5, 8	+10 ±0.1	10.01	Pass
DRO Ch 5	+10 ±0.1	9.97	Pars
DRO Ch 4	+10±0.1	10.01	Pass
DRO Ch 3	+10 ±0.1	9.99	Pass
DRO Ch 8	+10±0.1	9.97	Pass

Part No.: 1356409-1	Test Engineer: 2. Irul
Serial No.: FO/	Quality Assurance:
en de la companya de La companya de la co	Date: 04/8/98

MAR 30 98 57 (00) R. Kappon

TEST DATA

FOR

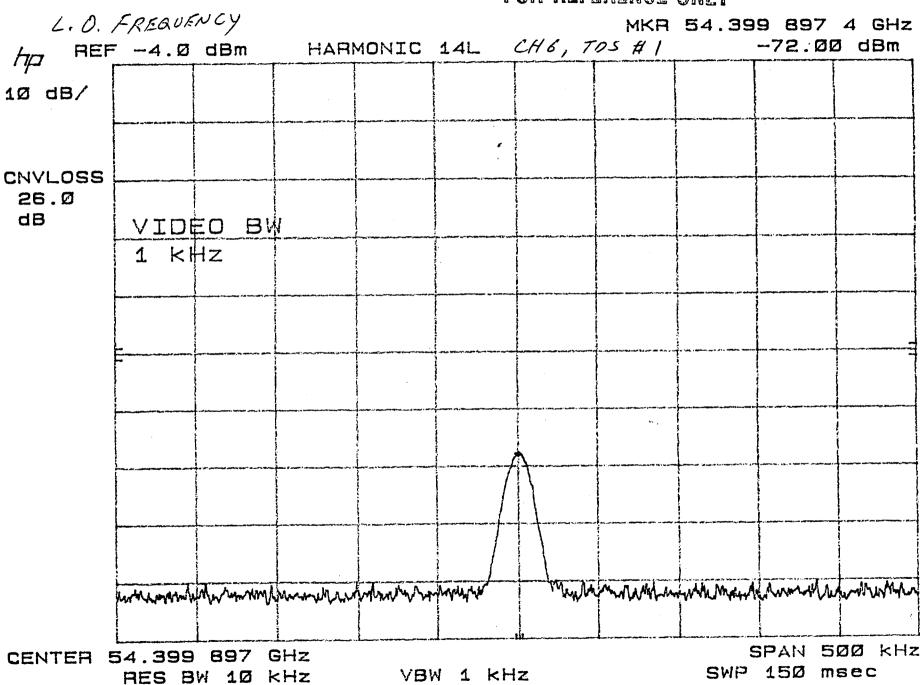
AMSU-A1-1 (P/N: 1356429-1, S/N: F01)

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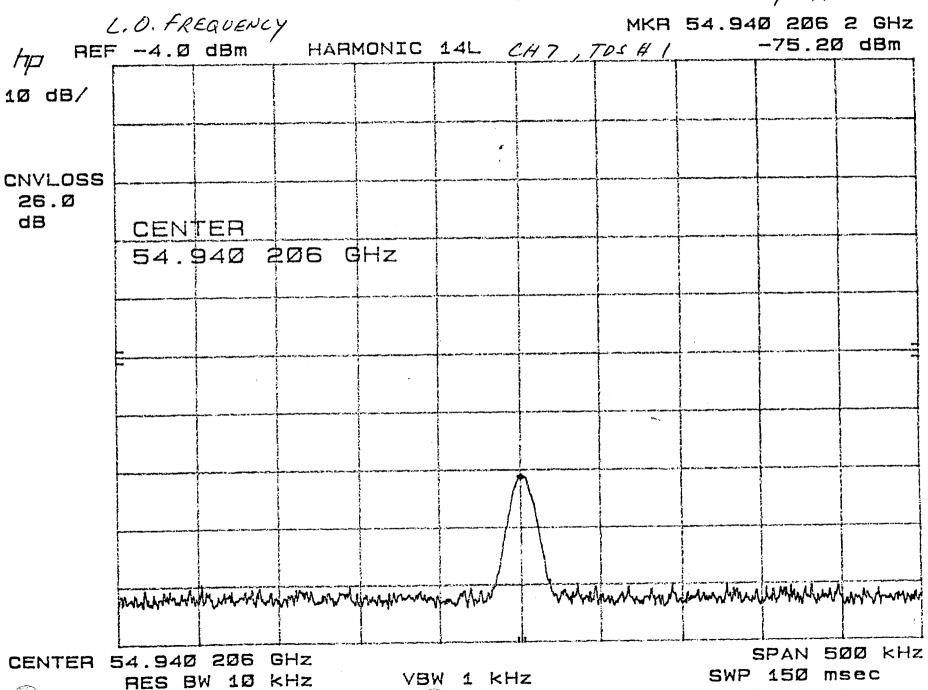
AE-26002/6A 15 Sep 97

Compo-		ed:/	Signature		Baseplate	e Temperatui	re (T _B) <u>7</u>	.7.7 °C		
Country-	 с	hannel	· · · ·	γ		D (14/)	<u>. </u>	<u> </u>	<u> </u>	
nent		No.	V _b (V)	l _b (mA)	Required (Max)	P _{dc} (mW) Measured	Pass/ Fail	Required	(GHz) Measured	Pass/ Fail
		6	9.97	179,8	2,700	1793.6	ρ	54.400 ± 0.003	54.400	P
	.:	7	9,94	 	2,700	1925.k		54.940 ± 0.003	54.940	P
	ļ	9	Posi-	1	9,000					
		10	tive		(13,500)*			,		
	LO	11	-					57.290344		
	No.	12	Nega-		1,500			± 0.000150		
LO	1	13	tive		. '			086		
20		14	-					•		
		9	Posi-		9,000				57. 290325	P
		10	tive		(13,500)*		_			Г
	LO	10		514.8		7789	P	77 000044	N/A	
	No.		Nega-	-	1,500			57.290344 ± 0.000150	N/A	
•	2	12	tive		1,000			\$84	N/A	
·		13	15.13	63.8	İ	965	P	_	N/A	
ļ		14							N/A	
İ		15	14,89	180.2	3500	<i>७६७</i> ३. च	. ρ	88.980 ± 0.080	38.983	8
Mixer/ Amps		All	9,94	242.1	2,550	1406.5				
IF Amps		Ali		264	5,500	3078.8				
				Primary:	24,510					
				(LO:#1):	(29,010)*					
Т(OTAL	· ·	Redi	indancy. (LO#2)	24,510 (29,010)*	1966c 5				
* Indicates	require	ed values f	or the PL0	O specifie	ed in AE-2666	60.		Pa	ass = P, F	ail = F
PLO) 1 L o	ock Detect	1			PL	.O 2 Loc	k Detect		
art No.:	/35	5642	9 - 1			Test Enginee	.r. 7	Litter		
art No.:		FO1	·				,			
enai No		<u>/ </u>				Quality Assur Date:		inc		········

· · · · · · · · · · · · · · · · · · ·		·	
·			
	•		
		4	



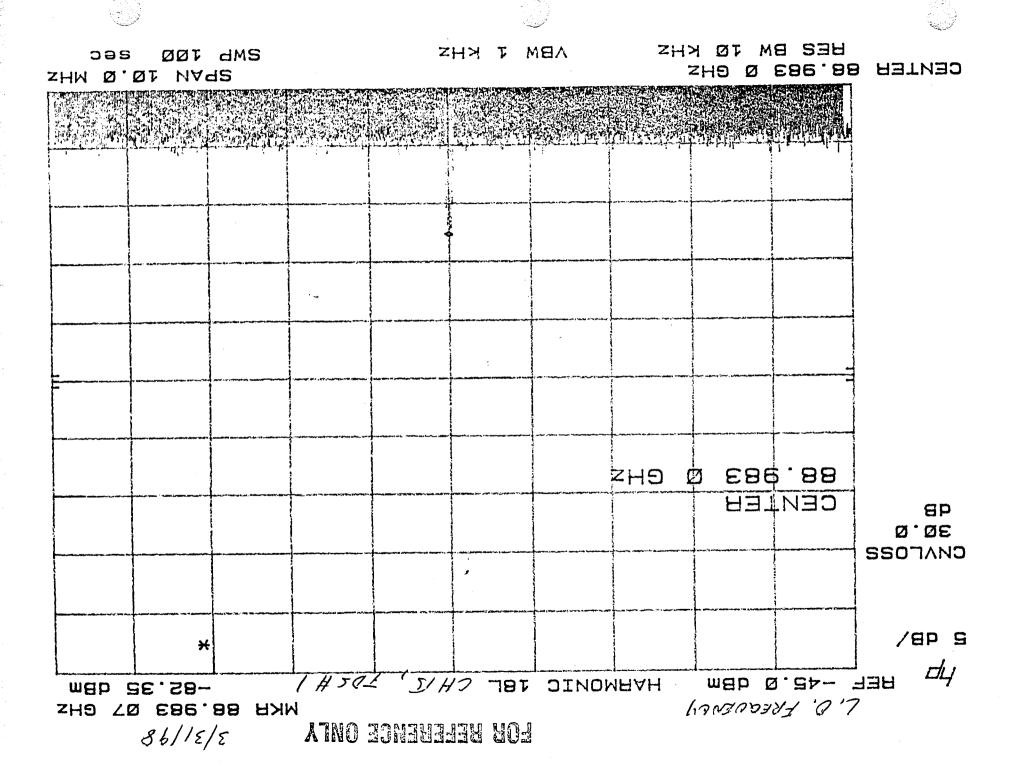
FOR REFERENCE ONLY 3/3//98



	•		ch 9-	18						12.00 S	
AG REF	ø.e	dBm	HAH	MONIC	1 4 L.		and the same that a set		ವಾ/.ಡ∷ 	-67.00	
10 dB/		? ? ?		: : :	5 7 8		· •			MEAS	UNCAL
	t communication of the defendance of the	The second section of the section of the sect		ing and the property of the second se	÷		e i ja vagut keesta keesta ee ele e	i de la compania de la compania de la compania de la compania de la compania de la compania de la compania de l Compania de la compania de la compa	Communication (Section 2)	The second secon	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
CNVLOSS 26.0	and the second second			il Section of the section of the section Section of the section of			:		d for the control of		A CONTRACTOR OF STANDSHIP STANDSHIP
dЗ	CEN	TEA		is in the second of the second	in a second contract to	ti ti	o de escrito de estre com como con		: - - - 	Signal of the second se	
- - - - - -	57.7	290 :	325 G	9HZ	: :	:					, , , , , , , , , , , , , , , , , , ,
5 1 2	and the second second second	· · · · · ·		The control of the co	£	*	المراجع والمستود والمراجع المراجع المر				oraconal materials and any constant
- 16 to 14	en en en ek en en kreinen kalender. Her		<u> </u>	ing the second s	English and the second	ener je	pot to the section of		is Borner in the control of the Control Borner in the control of the Control	Marian raw was a series and a s	And the second s
	a magain i shinasa dhe e i shifee e i a c		•	1		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	en en en en en en en en en en en en en e	-	e version and respect to the property of the p		
; ;	شدامه والمدرو والدراعة بالقوار والدرا	Mariners of the amount of the control of the contro			*	$/ \setminus$	and the second s			in the second se	
	Manager - Anima and and the first of the processor	:) 	i i i i i	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	egy y sames as as samenes or the fit of the contract of the co	The second secon	
	Ly	·	Memm	ymhana	m			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	maraman	mana	
•	ann a sa shekara ya ku ku sa shekara sa ka	} ************************************		de en en en en en en en en en en en en en			and the second second second second second	: : : :	or Para a day para a mengenera (mengenera) Bana a day para a mengenera (mengenera)	ing and a second of the second	Bank the true to the right
CENTER 5	7.290	325	GHZ						=	SPAN 5	ou kes

HES BW 10 KHR VBW 1 KHZ

SWP 50.0 msec



TEST DATA SHEET 4

IF Output :	Power Test	Data (Paragi	raph 3.5.2)	(Al-1)
7				

Test Setup Verified: Baseplate Temperature (T_B) 28.7 °C

				• • • •		•			
Compo-	Ci	nannel	V _b (V)	I _b (mA)	.P _o (dBm)	Atten (dB)	Po	dBm)	
nent		No.					Required	Measured	Pass/ Fail
		6	9.97	180	18.28	9	-27.0 ± 1.0	-27.14	P
		7	9.94	194	-19.02	8	-27.0 ± 1.0	-26.94	P
		9 ·	Posi-		N/A	n/a	-27.0 ± 1.0		
		10	tive		N/A	n/a	-27.0 ± 1.0		
	LO	11	1		n/a	n/a	-27.0 ± 1.0		
. '	No.	12	Nega-		n/a	n/a	-27.0 ± 1.0		
LO	1	13	tive		n/a	N/a	-27.0 ± 1.0		
	,	14	1	•	и/а	n/a	-27.0 ± 1.0		
		9	Posi-		#20#8£		-27.0 ± 1.0	-27.44	P
		10	tive	_	YEAR OF		-27.0 ± 1.0	-26.94	P
•	LO	11	15.13	514.6	100 PM		-27.0 ± 1.0	-27. iB	P
,	No.	12	Nega-		建设水设建		-27.0 ± 1.0	-26.67	P
	2	13	tive	100	1-20/42		-27.0 ± 1.0	-27.47	P
		14	15.13	63.8	20,04		-27.0 ± 1.0	-26.67	P
·		15	14.9	180	tura 13/35	2	-27.0 ± 1.0	-26.73	P
Mixer/ Amps		Ali	9,96	40.4					
IF Amps		All	7.95	263.6					

Pass = P, Fail = F

Part No.: /3	56429-1	Test Engineer:
Serial No.:	FOI	Quality Assurance:
	•	Date: $3/11/98$

AE-26002/6A 15 Sep 97

TEST DATA SHEET 7 (Sheet 1 of 2)
Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-1)

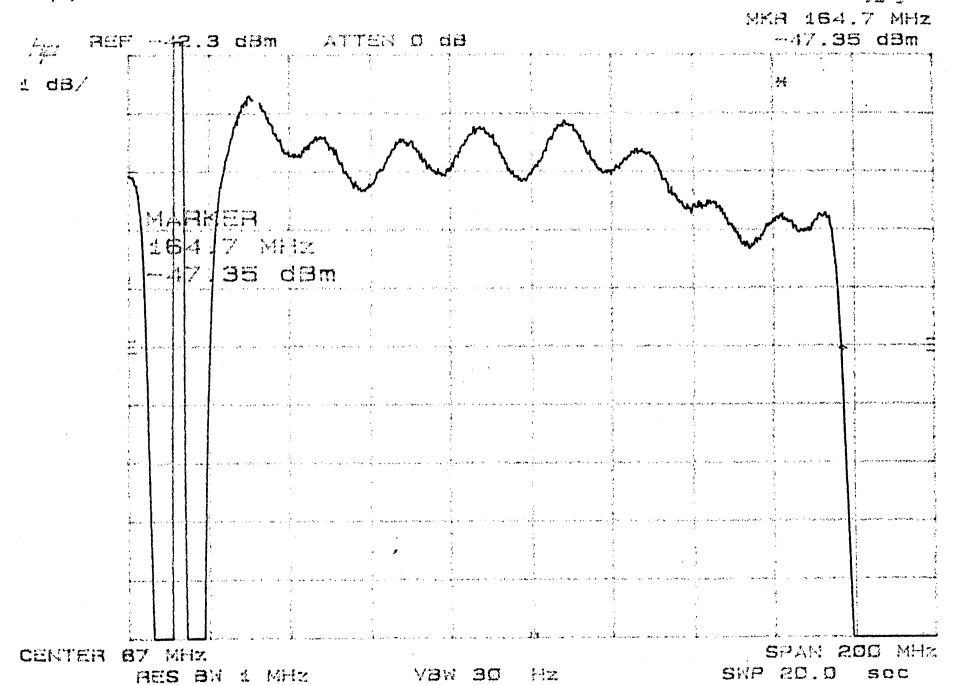
	O Danapass C	manufication root Dam (rangraph D.	0.0) (111 1)	
Test Setup Verified:	LJune	Baseplate Temperature (T _B)	27.7 °C	
	Signature			
	•		•	

Component		Channel No.	ੁ.V _b (V)	l _b (mA)	3 dB BW Frequency (MHz)		3 dB BW Frequency (MHz)		Pass/Fa
				·	Lower	Higher	Required MAX	Measured	
LO		6					400°200		
		7					400 200		
	LO	9	Positive				330 165		
	No.	10					78	•	
	1	11					36 36 36		
		12	Negative				16 16		
		13					<u>8</u> 8		
		14				•	3 3		
	LO	9	Positive	n/a	8.1	164.7	330 165	156.6	P
	No.	10	15,13	514.8	179.2	255.6	.78	76.4	P
	2 🐧	11	17,12	n/a	256,7 352,4	241.5 386.4	36 36	34.8	P
	`	12	Negative	n/a	292,5 336,8 308.3	308.1	16 16	15,6 15,6 7,9	P
		13	15:2	63.8	326.15	335-90	8 8	7.75	P
		14	15.13	n/a	316.52	319,26	3 3 3	2,94	P
`		15			493	1485	_6000 1000	992	P
Mixer/Amps		All				A DESCRIPTION OF THE PERSON OF			
IF Amps		All	PACE:						

Part No.:	1356429-1	Test Engineer:
Serial No.:	FOI	Quality Assurance:
		Date: 3/31/98

TEST DATA SHEET 7 (Sheet 2 of 2) Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-1)

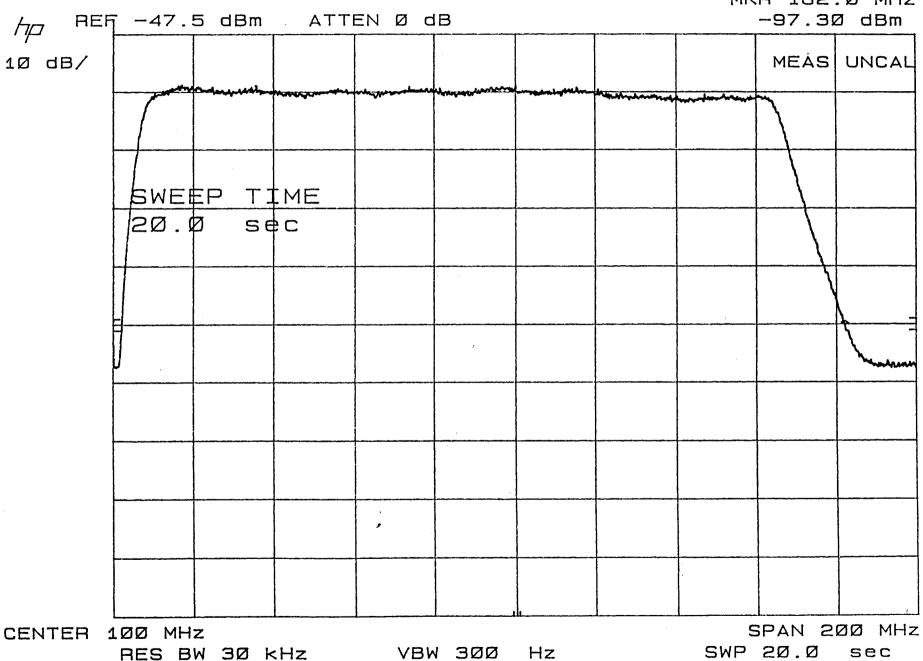
	Test Setup V	/erified:_	Q:	Lung—		eplate Temp		21.1 °C				
	Component		Channel V _b (V)		I _b (mA) 40 dB BW Frequency (MHz)		40 dB BW Frequency (MHz)		Pass/Fail			
				· ·	1 1 KA	Lower	Higher	Required MAX (Ref Only)	Measured			
	LO		6					520		/		
			7					520				
	1	LO	, 9	Positive				429				
1		No.	10					101				
		1	11					47		\setminus /		
			12	Negative				21		\/		
			13					10		į ·		
			14					4				
	•	LO	9	Positive	n/a	2:2	182.0	429	179.8	P/		
		No.	10	17:12	514,8	170.5	265.3	101	94.8	P/)		
		2	11	15:13	n/a	. •		47				
			12	Negative	n/a			21		/ \		
			13	15.13	63.8			10				
			14	19.11	W/a			4		/ \		
			15			n/a	nja	7800		/		
	Mixer/Amps All											
	IF Am	ps	All									
Part No.: -1356 429-1 Test Engineer:												
Serial No.: FO /						Quality Assurance:						
						Date:_	Date: 3/11/98					



3/40 ch. 9 ands righton char.

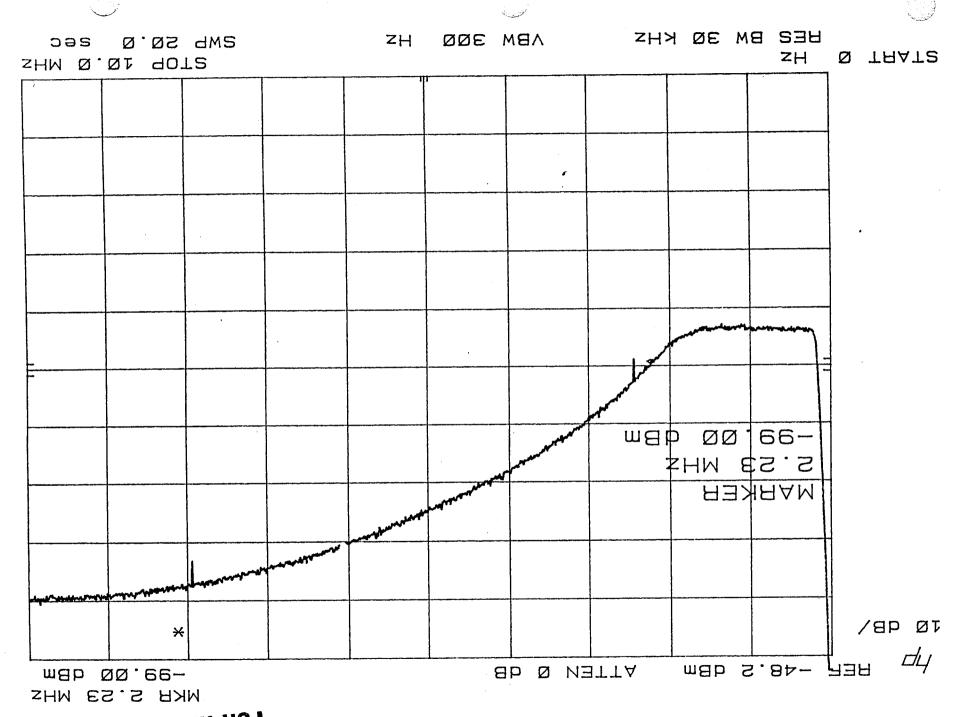
FOR REFERENCE ONLY

MKR 182.Ø MHz



LOB BELEBENCE ONLY

3/9/98 Than 9. Stop Band Tharacteristics.



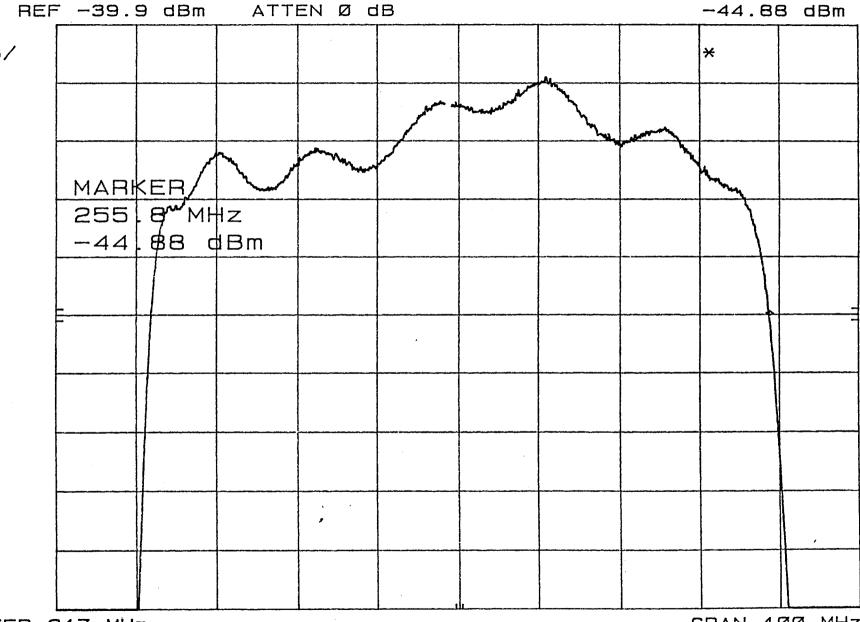
3/9/98 ch.10 3dB BP+

FOR REFERENCE OF

MKR 255.8 MHz

-44.88 dBm

1 dB/



CENTER 217 MHz

RES BW 1 MHz VBW 3Ø Hz

SPAN 100 MHz

SWP 20.0 sec

FOR REFERENCE ONLY

MKR 265.3 MHz REF -45.5 dBm ATTEN Ø dB -99.5Ø dBm *MEAS UNCAL 1Ø dB/ MARKER 265 3 MH/Z -99.5Ø dBm

CENTER 217 MHz HES BW 30 kHz VBW 300 Hz

SPAN 15Ø MHz SWP 20.0 sec

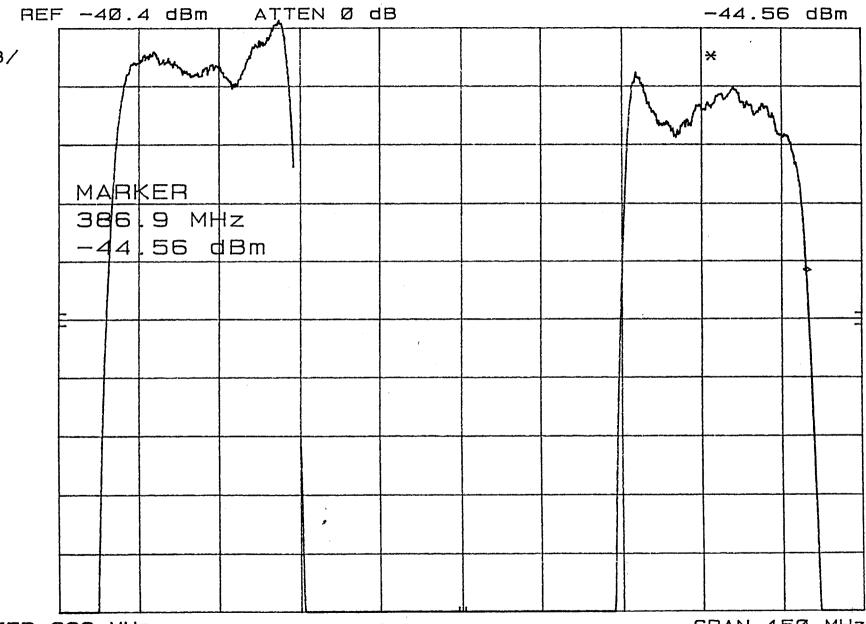
3/9/98 ch. 11 5-010 Bri

FOR REFERENCE ONLY

MKR 386.9 MHz



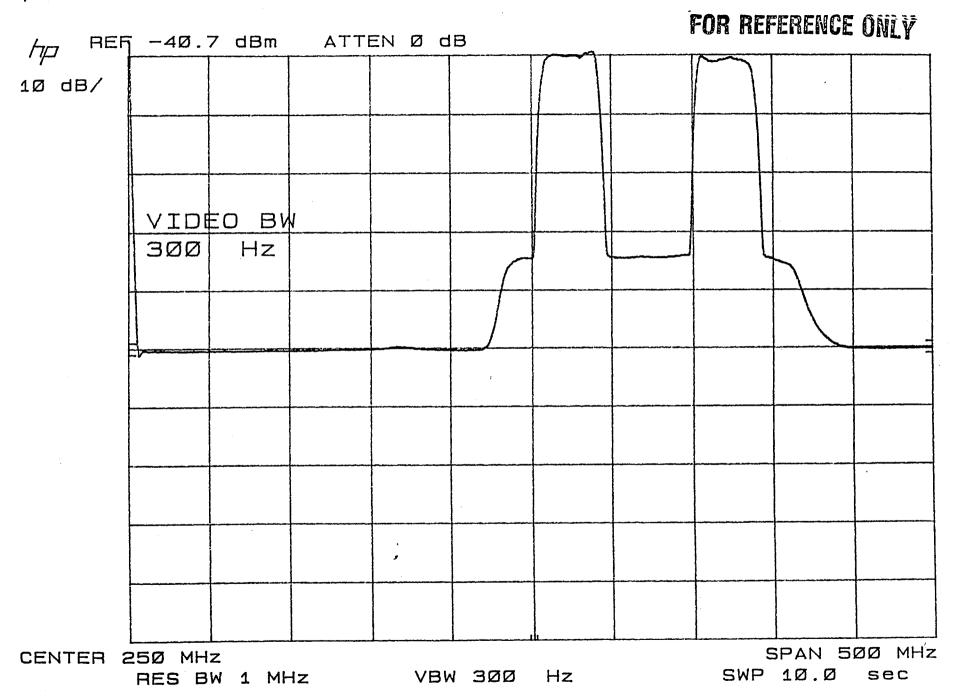
1 dB/



CENTER 322 MHz

RES BW 1 MHz VBW 3Ø Hz

SPAN 15Ø MHz SWP 20.0 sec

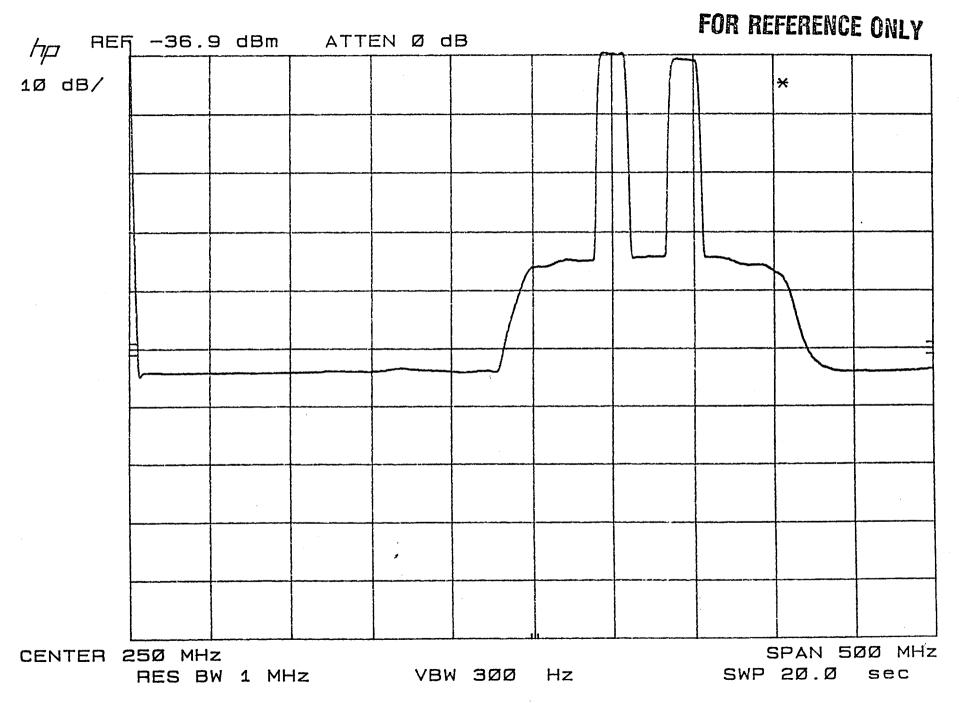


MKR 351.8 MHz

TO REF -36.5 dBm ATTEN Ø dB -4Ø.49 dBm 1 dB/ When the second MARKER 351.8 MHz -40149 dBm SPAN 100 MHz

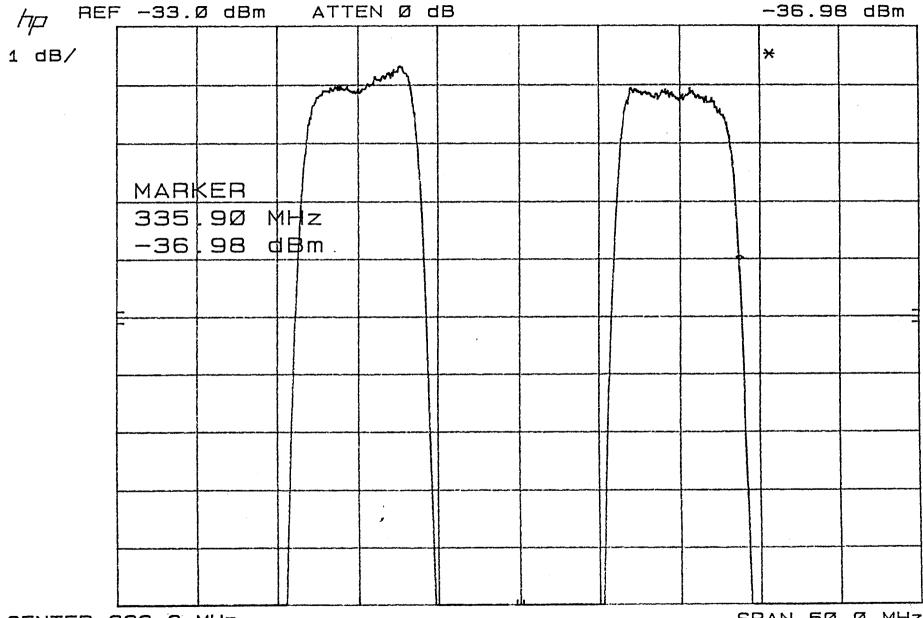
CENTER 322 MHz RES BW 1 MHz VBW 3Ø Hz

SWP 10.0 sec



FOR REFERENCE UNLY

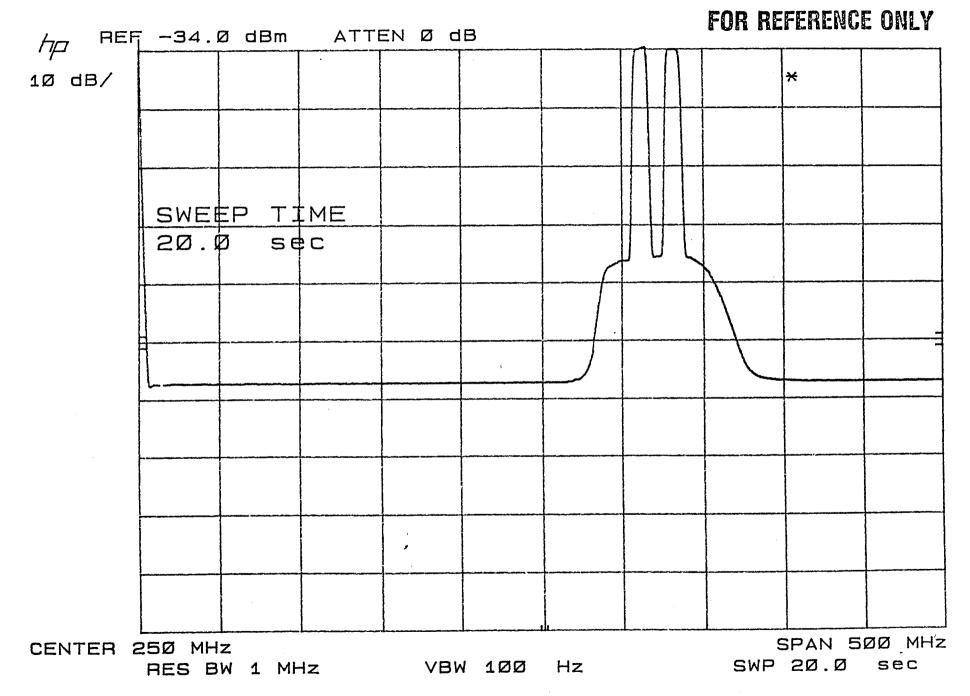
MKR 335.9Ø MHz

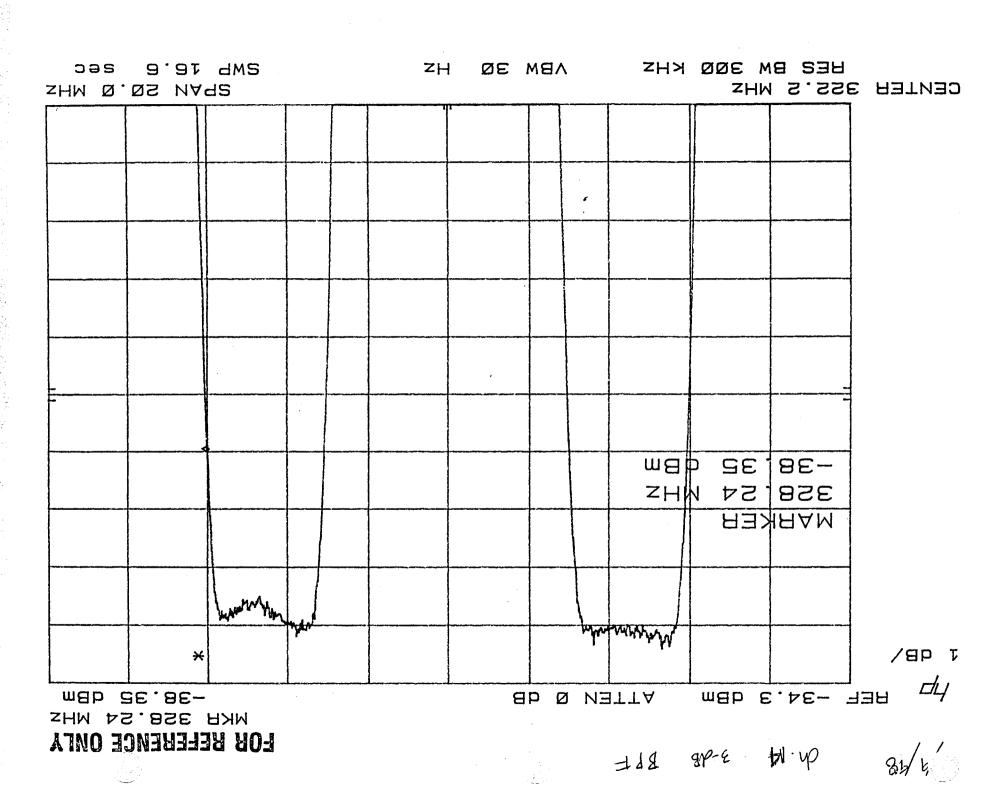


CENTER 322.2 MHz RES BW 1 MHz VBW 3Ø

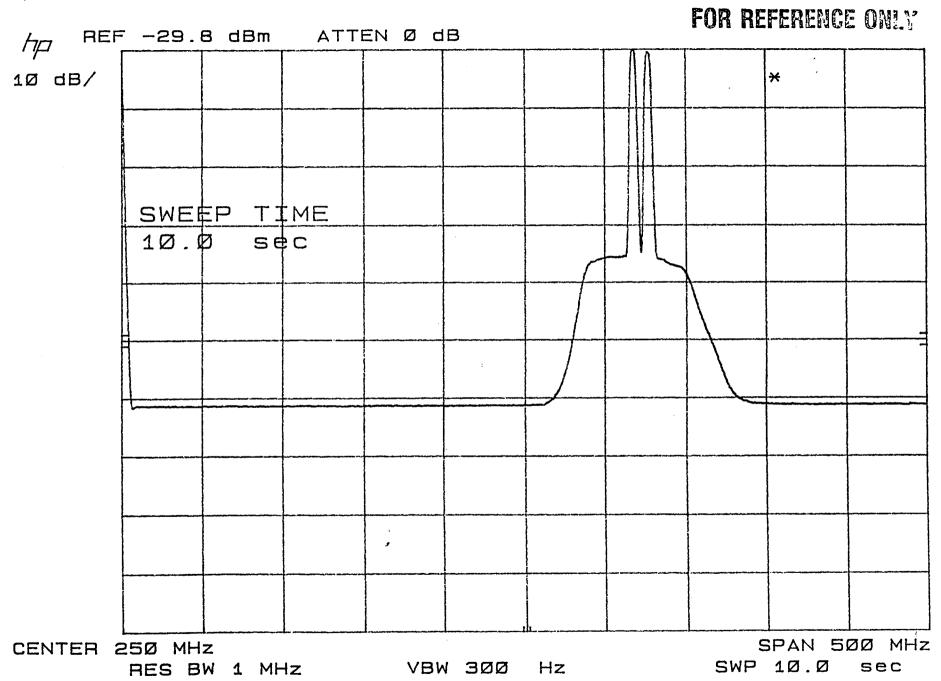
Hz

SPAN 5Ø.Ø MHz SWP 10.0 sec





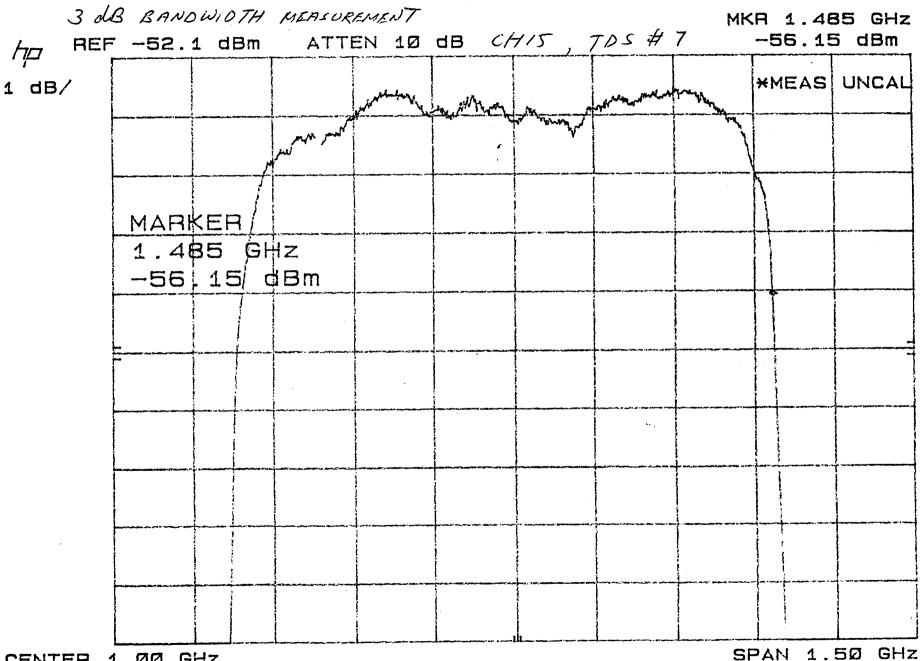
3/4/40 Ch. 14 DIF 7000



Mixer Part No. 1331562-2UF/7AID Isolator Part No. 1356680-8/05

FOR REFERENCE ONLY

3/31/18



CENTER 1.00 GHz RES BW 3 MHz

VBW 100 Hz

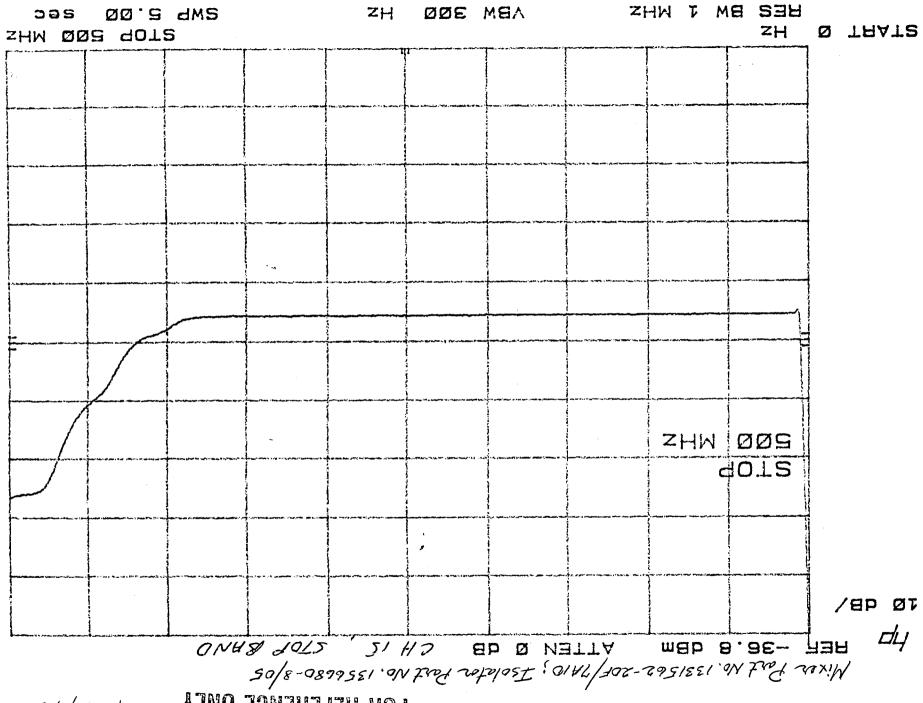
SPAN 1.5Ø GHZ SWP 1Ø.Ø sec

3/31/98 BANDWIDTH

40 OLB STOP BAND MEASUREMENT MIXUR PARTNO. 1331562-201/7A10

Isolator Part No. 1356480-8/05

REF -36.8 dBm ATTEN Ø dB CH 15, TDS 47 MKR 1.485 GHz -59.7Ø dBm *MEAS UNCAL 1Ø dB/ REF EVEL -36 8 dBm SPAN 1.5Ø GHz CENTER 1.00 GHZ SWP 5.00 sec VBW 300 Hz RES BW 1 MHz



86/18/8

LOW BELEBENCE ONTA

	AMS	SU-A TEST			, .	2 4000)
AMSI	J-A1-1, CHS	9, S/N FØ1	, NF & NPS TE	ST DATA	3/10/98 (A	1-2 HORN)
SEQ	TEMP_TEST	TEST TEMP		STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.25	90111731	.00017686		
2	COLD TEST	79.35	63969649	.00017309	4.07656977	.01799079
3	WARM TEST	296.25	90145067	.00018567		0.4700740
4	COLD TEST	79.35	63982171	.00016935	4.07470421	.04308342
5	WARM TEST	296.25	90183314	.00016710		
6	COLD TEST	79.35	64040712	.00014741	4.07996039	.05166987
7	WARM TEST	296.25	90175310	.00020683		00710101
8	COLD TEST	79.35	64099639	.00016149	4.09079842	.08718101
9	WARM TEST		90163545	.00015815		20051701
10	COLD TEST	79.35	64108868	.00017762	4.09375450	.06851781
11	WARM TEST	296.25	90163775	.00018403		
12	COLD TEST	79.35	64094411	.00014686	4.09129760	.03793818
13	WARM TEST	296.25	90158702	.00020246		07070477
14	COLD TEST	79.35	64078857	.00016876	4.08929083	.07979472
15	WARM TEST	296.25	90156087	.00016873		24201021
16	COLD TEST	79.35	64053818	.00016351	4.08539979	.04781021
17	WARM TEST	296.25	90144978	.00015468		
18	COLD TEST	79.35	64005300	.00018286	4.07858803	.07351372
19	WARM TEST	296.25	90127070	.00015401		22454255
20	COLD TEST	79.35	64025288	.00015552	4.08407186	.07451265
CH.	9 ,155 MH:	z MH	łz			
		AUEMANE /	ID \			

NOISE FIGURE AVERAGE (dB) = 4.08444825812

NOISE POWER STABILITY (K) = .0582012379421

NOISE POWER STABILITY DELTA (K) = .0691902228554

 $NPS_MAX (K) = .0871810133624 NPS_MIN (K) = .017990790507$

		AMSU-A1	-1, CH 9,	S/N F01, F	LIGHT RE	CEIVER SI	IELF (A1-2	HORN) • [То	290					
				LO FREQU								Thot	296,25	BandW	1,55E+08			
		3/10/98										Tcold		IntTime	0.165	overall		
												CHconst	6.1327E-06			expected		
ata	Description	Number Of	V Hot	V Hot	V Cold	V Cold	Scale Fac	Hot	Cold	Y Fact	Log(Y)	Noise Fig	Tsys	dTrec	theory	test		
-	Beseription	Samples	Mean	Std Dev	Mean	Std Dev	K/Volt	NEdT	NEdT		dB	dB	(K)	(K)	dG/G	NEdT		
ata	Description	Samples	MeanVh	StdDevVh	MeanVc	StdDevVc	ScalFac	HNEdT	CNEdT	YFact		NFdB	Tsys	dTrec	theorydG/G	testNEdT	Wload	Cload
		100	-0.9011173	0.000176860	-0.63969649	0.000173090	829.6967319	0.147	0.144	1.408663834		4.077	747.6540871	0.148	0.160	0.218	296.25	
		100					829.0366632	0.154	0.140	1.408909163		4.075	747.3356555		0.160	0.218	296.25	
		100					829.6802285	0.139	0.122	1.408218478		4.080	748.2331256		0.161	0.218	296.25	
		100	-0.9017531	0.000206830	-0.64099639	0.000161490	831.8098506	0.172	0.134	1.406799030		4.091	750.0871114		0.161	0.219	296.25	
		100	-0.9016355	0.000158150	-0.64108868	0.000177620	832.4800956	0.132	0.148	1.406412994		4.094	750,5935656		0.161	0.219	296.25	
		100	-0.9016378	0.000184030	-0.64094411	0.000146860	832.0110916	0.153		1.406733810		4.091	750.1726086		0.161	0.219	296.25	<u> </u>
_		100	-0.9015870	0.000202460	-0.64078857	0.000168760	831.676722	0.168	0.140	1.406996102		4.089	749.8289374		0.161	0.219	296.25	
_		100	-0.9015609	0.000168730	-0.64053818	0.000163510	830.9622432	0.140	0.136	1.407505279		4.085	749.1630429		0.161	0.219	296.25	
		100	-0.9014498	0.000154680	-0.64005300	0.000182860	829.773037	0.128	0.152	1.408398648		4.079	747.9987216		0.161	0.218	296.25	
		100	-0.9012707	0.000154010	-0.64025288	0.000155520	830.977747	0.128	0.129	1.407679259	0.075	4.084	748.9358958	0.148	0.161	0.219	296.25	79.3
		ļ				0.000164647	020 0104411	0.42	0.127	1.407631660	0.050	4.094	749.0002752	0 140	0.161	0,219	296.25	79.3
	AVERAGE		-0.9015296	0.000175852	-0.64045871	0.000164647	830.8104411	0.146	0.137	1.407631660	0.058	4.084	149.0002732	0.148	V.101	0,219	290.23	17.3
		<u> L</u>		<u> </u>	L	L		L	l		L	l	<u> </u>	L	1		<u>. </u>	╁
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	1		0.200	0.147		0.139		0.132	:			0.14	0.12	<u> </u>	0.126			
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NF (dB) NPS(K)	STD_DEV	VOLTAGE	TEST TEMP	TEMP_TEST	SEQ	
4 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	.00033265	99445749	296.45	WARM TEST	1	
4.13263932 .14006357	.00021557	70930953	79.25	COLD TEST	2	
4.12678460 .08849221	.00030027	99330582	296.45	WARM TEST	3	7
4.12678460 .08849221	.00022433	70810714	79.25	COLD TEST	4	
4.12790631 .02685942	.00027892	99259453	296.45	WARM TEST	5	U
4.12730831 .02003542	.00021674 .00029285	70767305	79.25	COLD TEST	6	
4.11601036 .07331307	.00021878	99207144 70652569	296.45	WARM TEST	7	
4,11001000	.00021878	99160440	79.25	COLD TEST	8	
4.09947866 .06287410	.00021584	70511391	79.25	WARM TEST	9	
	.00021304	99120834	296.45	WARM TEST	10	
4.11362888 .08688015	.00024863	70575587	79.25	COLD TEST	11 12	
	.00024333	99105303	296.45	WARM TEST	13	
4.11893621 .05976745	.00024885	70599088	79.25	COLD TEST	14	
	.00030805	99086518	296.45	WARM TEST	15	
4.10800011 .10370172	.00023824	70514462	79.25	COLD TEST	16	
	.00027177	99073988	296.45	WARM TEST	17	
4.10824506 .03729737	.00024205	70507142	79.25	COLD TEST	18	
	.00028269	99070411	296.45	WARM TEST	19	
4.12057553 .04607434	.00024235	70584894	79.25	COLD TEST	20	18

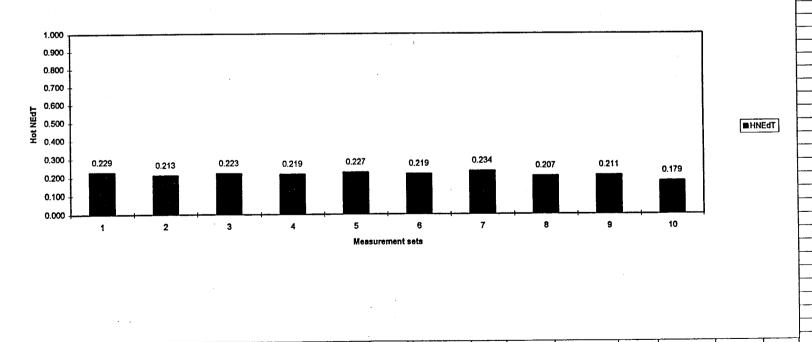
NOISE POWER STABILITY (K) = .0725323386736

NOISE POWER STABILITY DELTA (K) = .11320415061

	AMSU	J-A1-1,CH10	,S/N F01,	NF & NPS TES	T DATA	3/10/98 (A/	2 HORN
				VOLTAGE	STD_DEV	NF (dB)	NPS(K)
19		WARM TEST	296.45	99076401	.00023354	4 17770574	.11282359
30		COLD TEST	79.25	70697757	.00023323	4.13730534	.11282355
	3	WARM TEST	296.45	99053124	.00028750	4.14621213	.06145452
	4	COLD TEST	79.25	70738781	.00026661 .00027888	4.14021213	.00145456
	5	WARM TEST	296.45	99037493	.00027888	4.14995622	.03037386
	6	COLD TEST	79.25	70751807	.00020757	4.14555022	.03031300
	7	WARM TEST	296.45 79.25	99027938 70660585	.00020771	4.13690524	.06009073
	8	COLD TEST		99017142	.00026777	4.10030327	
	9	COLD TEST	79.25	70720311	.00023046	4.14733052	.05546003
		WARM TEST	0.00	0.00000000	0.00000000		
	11 12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	13	WARM TEST		0.00000000	0.00000000		
	14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	15	WARM TEST	0.00	0.00000000	0.00000000		~
	16	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	17	WARM TEST	0.00	0.00000000	0.00000000		
	18	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	19	WARM TEST	0.00	0.00000000	0.00000000		·
	20	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	сн.	10 ,78 MHz	мн	z			
	NOI	SE FIGURE A	NERAGE (d	B) = 4.143	354524042		
	NOI	SE POWER ST	ABILITY (K) = .0640	405669145		
	NOI	SE POWER ST	ABILITY D	ELTA (K) =	.082449	8309672	
	NPS.	_MAX (K) =	.1	12823692061	NPS_M	IN (K) = .03	03738610938
	INT	EGRATION TI	ME = .1	65			

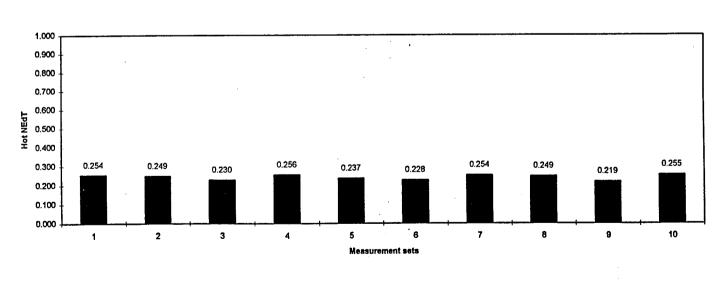
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		AMSU-A1	-1, CH10,	S/N F01, F	LIGHT RE	CEIVER S	HELF (A1-2	HORN)			То	290					<u> </u>
		(BPF 78.0	MHZ & L	O FREQUI	ENCY 57.29	90321 GHZ)					Thot		BandW	7.80E+07			L
		3/10/98				, ,						Tcold	79.25	IntTime	0.165	overall		
												CHconst	6.1327E-06			expected	L!	ļ
Data	Description	Number Of	V Hot	V Hot	V Cold	V Cold	Scale Fac	Hot	Cold	Y Fact	Log(Y)	Noise Fig	Tsys	dTrec	theory	test	ļ!	
		Samples	Mean	Std Dev	Mean	Std Dev	K/Volt	NEdT	NEdT		dB	dB	(K)	(K)	dG/G	NEdT	ļ	
			14 15	Ch JD 37h	MeanVc	StdDevVc	ScalFac	HNEdT	CNEdT	YFact	NPS	NFdB	Tsys	dTrec	theorydG/G	testNEdT	Wload	Cload
Data_	Description	Samples 100	MeanVh	StdDevVh			761.5743523	0.229	0.171	1.402762045		4.127	756,4762365		0.162	0.266	296.45	
		100		0.000308270				0.213	0.165	1.402617395		4.128	756.6699847	0.211	0.162	0.266	296.45	79.25
		100					760.6486876	0.223	0.166	1.404154802	0.073	4.116	754.6178389	0,210	0.162	0.265	296.45	1
		100					758.1403487	0.219	0.164	1.406303841	0.063	4.099	751,7753056	0.210	0.161	0.264	296.45	
		100		0.000298960				0.227	0.189	1.404463473		4.114	754.2077021	0.210	0.162	0.265	296.45	
,		100		0.000287170				0.219	0.190	1.403775967	1	4.119	755.1220606		0,162	0.266	296.45	
		100					760.1833064	0.234	0.181	1.405194271		4.108	753.2391687		0.162	0.265	296.45	
		100		0.000271770				0.207	0.184	1.405162444		4.108	753.2812756		0.162	0.265	296.45	
		100					745.8992028	0.211	0.182	1.412541754		4.052	743.6921616	·	0.160	0.262	296.45	
		100	-0.9907640	0.000233540	-0.70697757	0.000233230	765.3642648	0.179	0.179	1.401407982	0.113	4.137	758.2953681	0.211	0.163	0.267	296.45	79.2
	AVERAGE		-0.9921248	0.000284280	-0.70622091	0.000233019	759.7283757	0.216	0.177	1.404838397	0.069	4.111	753.7377102	0.210	0.162	0.265	296.45	79.2
		1	l		<u> </u>			HNI	I ≣dТ		<u></u>	<u> </u>	1	1	1		<u> </u>	



AMSU-A1-1, CH11,S/N FØ1, NF & NPS TEST	r DATA 3/	10/98 (A/-	2 HORN)
SEQ TEMP_TEST TEST TEMP VOLTAGE	· · · · · · · · · · · · · · · · · · ·	NF (dB)	NPS(K)
1 WARM TEST 296.6595982244 2 COLD TEST 79.1570271250	.00019227 4.	43561737	.09590036
3 WARM TEST 296.6595919264 4 COLD TEST 79.1570155891	.00029540 .00023797 4.	42383142	.08365316
5 WARM TEST 296.6595888688 6 COLD TEST 79.1570053917	.00027262 .00022966 4.	41031665	.04568540
7 WARM TEST 296.6595862335 8 COLD TEST 79.1569931701	.00030513 .00024528 4.		.10527090
9 WARM TEST \ 296.6595857590 10 COLD TEST 79.1569958556	.00028185		.03843619
11 WARM TEST 296.6595842857 12 COLD TEST 79.1569959472	.00027084	.39999081	.05293635
13 WARM TEST 296.6595835245	.00030082		.09681991
14 COLD TEST 79.1570040673 15 WARM TEST 296.6595855172 16 COLD TEST 79.1570135062	.00029418		.08112132
17 WARM TEST 296.6595851784	.00026077		.08130895
19 WARM TEST 296.6595847491	.00030336		.10191983
20 COLD TEST 79.1569973525 CH. 11 ,72 MHz MHz	.00025145	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
NOISE FIGURE AVERAGE (dB) = 4.4112	8771706		
NOTE TO THE WALL TO SERVE THE SERVE			
No. 10 Toward Tribal Property of the Control of the		7 7	
NOISE POWER STABILITY DELTA (K) =			
$NPS_MAX (K) = .105270903315$	NPS_MIN (K) = .საც4ან	1907545
INTEGRATION TIME = .165			

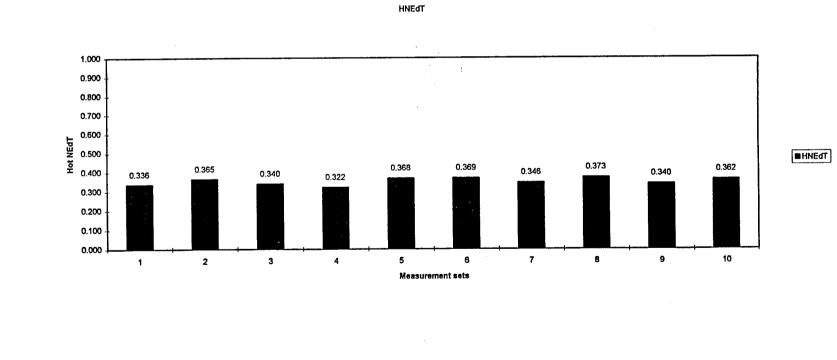
		AMSU-A1	-1, CH11,	S/N F01, F	LIGHT RE	CEIVER S	HELF (A1-2	HORN)			To	290					
					ENCY 57.29							Thot	296.65	BandW	7.20E+07			
		3/10/98										Tcold	79.15	IntTime	0.165	overall		
												CHconst	6.1327E-06			expected		
Data	Description	Number Of	V Hot	V Hot	V Cold	V Cold	Scale Fac	Hot	Cold	Y Fact	- 5		Tsys	dTrec	theory	test		
		Samples	Mean	Std Dev	Mean	Std Dev	K/Volt	NEdT	NEdT		dB	dB	(K)	(K)	dG/G	NEdT		ļ
Data	Description	Samples	MeanVh	StdDevVh	MeanVc	StdDevVc	ScalFac	HNEdT	CNEdT	YFact	NPS	NFdB	Tsys	dTrec	theorydG/G	testNEdT	Wload	Cload
	Becerption				-0.70271250	0.000192270	845.9416233	0.254	0.163	1.365882121	0.096	4.436	811.9537529	0.236	0.174	0.293	296.65	79.15
		100					844.2217562	0.249	0.201	1.367230358	0.084	4.424	809.7712951	0.235	0.174	0.292	296.65	
		100					841.8886314	0.230	0.193	1.368784104		4.410	807.2759631	0.234	0.173	0.291	296.65	
		100	-0.9586234	0.000305130	-0.69931701	0.000245280	838.7762521	0.256	0.206	1.370799418		4.393	804.0705006		0.173	0.290	296.65	
		100			-0.69958556			0.237	0.179	1.370205383		4.398	805.0117168		0.173	0.291	296.65	
		100			1		840.3074018	0.228	0.167	1.369976849		4.400	805.3746215		0.173	0.291	296.65	
		100					843.2003606	0.254	0.208	1.368280028		4.415	808.0832073		0.173	0.292	296.65	
		100					845.6417955	0.249	0.179	1.366722567		4.428	810.5913975		0.174	0.293	296.65	
		100					841.6227694	0.219	0.211	1.369138063		4.407	806.7104390		0.173	0.291	296.65	
		100	-0.9584749	0.000303360	-0.69973525	0.000231490	840.6133022	0.255	0.195	1.369767937	0.102	4.402	805.7067592	0.234	0.173	0.291	296.65	79.15
				0.000000545	0.70040000	0.000006064	043 2012554	0.243	0.190	1,368678683	0.078	4.411	807,4549653	0.234	0.173	0.291	296.65	79.15
	AVERAGE		-0.9587427	0.000288547	-0.70048890	0.000225864	842.2013554	0.243	0.190	1.3080/8083	0.078	4.411	607,4347033	0.234	0.173	0.251	250.03	1,5.13
	-	1	L		J		1	HNE	idT	1	<u> </u>	L		1		.l	<u> </u>	



■HNEdT

	FNIC	JO 11 1E31		TEST DATA		101-2	HORN)
AMS	J-A1-1, CH1	12, S/N F	01, NF & NPS	TEST DATA	3/10/98		
SEQ	TEMP_TEST	TEST TEM	P VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.65	-1.08756210	.00045309			
2	COLD TEST		79466918	.00036845			.10160599
3	WARM TEST	296.65	-1.08664766	.00049166			
4	COLD TEST	79.15	79337433	.00035905	4.4027		.09975466
5	WARM TEST	296.65	-1.08591662	.00045848			
6	COLD TEST	79.15	79237843	.00032726	4.3958	3882	.08492224
7	WARM TEST	296.65	-1.08552235	.00043182			
8	COLD TEST	79.15	79369504	.00037664			.14279367
9	WARM TEST		-1.08554840	.00049563			
10	COLD TEST	79.15	79294342	.00036605	4.4083		.11141294
11	WARM TEST	296.65	-1.08551615	.00049647			
12	COLD TEST	79.15	79311243	.00037958			.11356791
13	WARM TEST	296.65	-1.08553792	.00046453			
14	COLD TEST	79.15	79330257	.00034695	4.4138		.06398906
15	WARM TEST	296.65	-1.08553439	.00050193			
16	COLD TEST	79.15	79288744	.00036198		5317	.12603666
17	WARM TEST	296.65	-1.08547702	.00045562			
18	COLD TEST	79.15	79401787	.00035084	4.4252	4129	.09310618
19	WARM TEST	296.65	-1.08560556	.00048661			
20	COLD TEST	79.15	79296153	.00033754	4.4079	9394	.08660166
сн.	12 ,32 MH:	z M	lHz				
NOI	SE FIGURE	AVERAGE (dB > = 4.41	051179495			
				7777777777			
NOI	SE POWER S	INRILII	(K) = .102	2379098062			
NOI	SE POWER S	TABILITY	DELTA (K) =	.078804	6106446		
NPS.	_MAX (K) =		142793670174	NPS_M	1IN (K) =	.063989	90595291

		AMSU-A1	-1, CH12,	S/N F01, F	LIGHT RE	CEIVER S	HELF (A1-2	HORN)			То	290					Ĺ
		(BPF 32.0	MHZ & L	O FREQUI	ENCY 57.29	00321 GHZ)					Thot	296.65	BandW	3.20E+07			i
		3/10/98										Tcold	79.15	IntTime	0.165	overali		
	<u> </u>											CHconst	6.1327E-06			expected		
Data	Description	Number Of	V Hot	V Hot	V Cold	V Cold	Scale Fac	Hot	Cold	Y Fact	Log(Y)	Noise Fig	Tsys	dTrec	theory	test '		
		Samples	Mean	Std Dev	Mean	Std Dev	K/Volt	NEdT	NEdT		dB	dB	(K)	(K)	dG/G	NEdT		
			77. 77.	C+4D1/1-	MeanVc	StdDevVc	ScalFac	HNEdT	CNEdT	YFact	NPS	NFdB	Tsys	dTrec	theorydG/G	testNEdT	Wload	Cload
Jata	Description	Samples	MeanVh	StdDevVh		0.000368450		0.336	0.274	1.368572140		4.412	807.6151405		0.173	0.392	296.65	L
		100				0.000368430		0.365	0.266	1.369653162		4.403	805,8893935		0.173	0.391	296,65	ļ
		100					740.9598049	0.340	0.242	1.370452020		4.396	804.6205669		0.173	0.390	296.65	79.15
		100					745.3037894	0.322	0.281	1.367681912	1	4.420	809.0439210	0.352	0.174	0.393	296.65	79.15
		100					743.3229605	0.368	0.272	1.369011171		4.408	806.9130505	0.351	0.173	0.392	296.65	79.15
		100				0.000379580		0.369	0.282	1.368678776	0.114	4.411	807.4444560	0.351	0.173	0.392	296.65	79.15
		100					744.2631427	0.346	0.258	1.368378171	0.064	4.414	807.9258639	0.352	0.173	0.392	296.65	
		100					743.2163568	0.373	0.269	1.369090157	0.126	4.408	806.7869145	0.351	0.173	0.391	296.65	
	<u> </u>	100					746.2452285	0.340	0.262	1.367068754	0.093	4.425	810.0320469	0.353	0.174	0.393	296.65	
		100					743.2237726	0.362	0.251	1.369051989	0.087	4.408	806.8478598	0.351	0.173	0.392	296.65	79.15
	AVERAGE		-1.0858868	0.000473584	-0.79333422	0.000357434	743.4590827	0.352	0.266	1.368763825	0.102	4.411	807.3119213	0.351	0.173	0.392	296.65	79.15
											l			L	1	1	1	+



	SEQ	TEMP_TEST			STD_DEV	NF (dB)	NPS(K)
	1	WARM TEST	296.75	92768776	.00071508	4 047771AE	.36070780
	2	COLD TEST	79.15	66797247	.00046465	4.24377145	.30070700
	3	WARM TEST	296.75	92372051	.00064549 .00041790	4.24523303	.25731037
	4	COLD TEST	79.15	66520216 92141573	.00057935	4.24323303	
	5	WARM TEST	296.75 79.15	66407333	.00040632	4.25426211	.10021940
	6 7	WARM TEST	296.75	92047467	.00058020		
	8	COLD TEST	79.15	66302951	.00033684	4.24803633	.10587082
	9	WARM TEST		91959674	.00054820		
	1Ø	COLD TEST	79.15	66236449	.00043247	4.24748049	.11902447
,	$-\frac{10}{11}$	WARM TEST	296.75	91895377	.00059288		
,		COLD TEST	79.15	66159332	.00046327	4.24223349	.15036116
J		WARM TEST	296.75	91829667	.00053095		
	14	COLD TEST	79.15	66177063	.00041632	4.25332659	.16429922
	15	WARM TEST	296.75	91812094	.00049265		
	16	COLD TEST	79.15	66206864	.00041669	4.26058607	.23520187
	17	WARM TEST	296.75	91779379	.00059799		
	18	COLD TEST	79.15	66136552	.00042096	4.25259692	.16655769
	19	WARM TEST	296.75	91722845	.00055485		
10	20	COLD TEST	79.15	66139749	.00037669	4.26011414	.08845515

NOISE POWER STABILITY (K) = .174800795681

NOISE POWER STABILITY DELTA (K) = .272252651318

NPS_MIN (K) = .0884551482855 $NPS_MAX (K) = .360707799604$

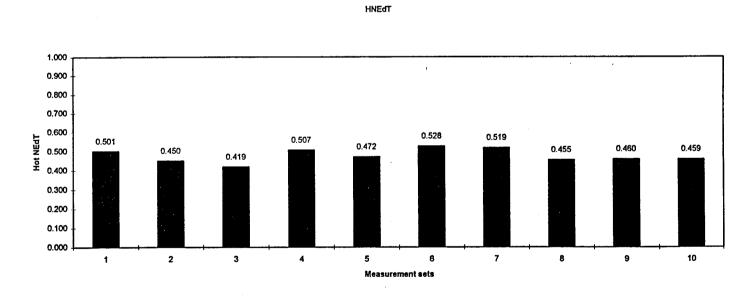
		AMS	SU-A TEST				. OHOKN)
	AMSU	J-A1-1, CH1	3, S/N F0	1, NF & NPS	TEST DATA	3/10/98	91-2 HOKN	
	SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)	
17	1	WARM TEST	296.75	91617547	.00061757		0.5.501.4	
	2	COLD TEST	79.15	66143165	.00041942	4.27373759	.21516514	
	3	WARM TEST	296.75	91590515	.00060709		.19275632	
Ų	4	COLD TEST	79.15	66146089	.00042646	4.27759935	.13273632	
	5	WARM TEST		91590638	.00053180	4.28023055	.15995897	
	8	COLD TEST	79.15	66161456	.00039323	4.28023033		
	7	WARM TEST	296.75	91543412	.00053789 .00048259	4.27542116	.14337953	
	8	COLD TEST	79.15	66099423 91540365	.00053734	4.2(342110		
20	9	WARM TEST	79.15	56087480	.00033734	4.27374388	.14478505	
2 <u>0</u>	10	WARM TEST	0.00	0.00000000	0.00000000			
	11 12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000	
	13	WARM TEST	0.00	0.00000000	0.00000000			gi.
	14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000	É
	15	WARM TEST	0.00	0.00000000	0.00000000			
	16	COLD TEST	0.00	0.00000000	0.00000000	Ø.ØØØØØØØØ	0.00000000	
	17	WARM TEST	0.00	0.00000000	0.00000000			
	18	COLD TEST	0.00	0.000000000	0.00000000	0.00000000	0.00000000	
	19	WARM TEST	0.00	0.00000000	0.00000000			
	20	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000	
	CH.	13 ,16 MH:	z MH	z				
	NOI	SE FIGURE A	AVERAGE (d	B) = 4.27	614721751			

NOISE POWER STABILITY (K) = .171209804086

NOISE POWER STABILITY DELTA (K) = .0717896137388

 $NPS_MAX (K) = .21516914305 NPS_MIN (K) = .143379529311$

<u> </u>	ļ	AMSU-A	l-1, CH13,	S/N F01, F	LIGHT RE	CEIVER S	HELF (A1-2	HORN	1)			То	290					
		(BPF 16.0	MHZ & I	O FREQU	ENCY 57.2	90321 GHZ)					Thot	296.75	BandW	1.60E+07			
		3/10/98										Tcold	79.15	IntTime	0.165	overall		
												CHconst	6.1327E-06			expected		
Data	Description	Number Of	V Hot	V Hot	V Cold	V Cold	Scale Fac	Hot	Cold	Y Fact	Log(Y)	Noise Fig	Tsys	dTrec	theory	test		
	<u> </u>	Samples	Mean	Std Dev	Mean	Std Dev	K/Volt	NEdT	NEdT		dB	dΒ	(K)	(K)	dG/G	NEdT		
																		<u> </u>
Data	Description	Samples	MeanVh	StdDevVh	MeanVc	StdDevVc	ScalFac	HNEdT	CNEdT	YFact	NPS	NFdB	Tsys	dTrec	theorydG/G	testNEdT	Wload	Cload
		100	-0.9189538	0.000592880	-0.66159332	0.000463270	845.5067591	0.501	0.392	1.389000980	0.150	4.242	776.9816238	0.478	0.167	0.506	296.75	79.15
		100	-0.9182967	0.000530950	-0.66177063	0.000416320	848.2569645	0.450	0.353	1.387635879	0.164	4.253	778.9515458	0.479	0.167	0.508	296.75	79.15
		100	-0.9181209	0.000492650	-0.66206864	0.000416690	849.8263831	0.419	0.354	1.386745852	0.235	4.261	780.2433977	0.480	0.167	0.509	296.75	79.15
		100	-0.9177938	0.000597990	-0.66135520	0.000420960	848.5462348	0.507	0.357.	1.387747144	0.167	4.252	778.7904648	0.479	0.167	0.508	296.75	79.15
		100	-0.9172285	0.000554850	-0.66139749	0.000376690	850.5616365	0.472	0.320	1.386803645	0.088	4.260	780.1593315	0.480	0.167	0.509	296.75	79.15
		100	-0.9161755	0.000617570	-0.66143165	0.000419420	854.1914775	0.528	0.358	1.385140052	0.215	4.274	782.5892784	0.482	0.168	0.510	296.75	79.15
		100	-0.9159052	0.000607090	-0.66146089	0.000426460	855.1971265	0.519	0.365	1.384670150	0.193	4.278	783.2794524	0.482	0.168	0.511	296.75	79.15
		100	-0.9159064	0.000531800	-0.66161456	0.000393230	855.7097904	0.455	0.336	1.384350399	0.160	4.280	783.7500565	0.482	0.168	0.511	296.75	79.15
		100	-0.9154341	0.000537890	-0.66099423	0.000482590	855.2118145	0.460	0.413	1.384935115	0.143	4.275	782.8900748	0.482	0.168	0.510	296.75	
		100	-0.9154037	0.000537340	-0.66087480	0.000384650	854.9129107	0.459	0.329	1.385139288	0.145	4.274	782.5903988	0.482	0.168	0.510	296.75	79.15
															<u> </u>		L	
	AVERAGE		-0.9169218	0.000560101	-0.66145614	0.000420028	851.7921098	0.477	0.358	1.386216850	0.166	4.265	781.0225625	0.481	0.168	0.509	296.75	79.15
			1				I		1	11	1		1	ł	1	I	1	1



■HNEdT

AMSU-A1-1, CH14, S/N F01, NF & NPS TEST DATA 3/10/98

3/10/98 (A1-2 HORN)

	SEQ	TEMP_TEST	TEST TEM		STD_DEV	NF (dB)	NPS(K)
	1	COLD TEST	296.75 79.15	-1.08042225 78384318	.00207958	4.33000007	1.30127150
7	- 3 4	WARM TEST	296.75 79.15	-1.09104681 78764859	.00120012	4.27328733	.34979710
V	5 6	WARM TEST	296.75 79.15	-1.09326197 78688507	.00114411	4.23937230	.22648041
	7 8	WARM TEST	296.75 79.15	-1.09208777 78796965	.00114650 .00078703	4.26708270	.23706051
	10	WARM TEST	79.15	-1.09537629 78773720	.00123861 .00084584 .00109391	4.22982520	.40148168
	11	WARM TEST	296.75 79.15	-1.09594490 78742044 -1.09543797	.00105551	4.21950811	.09082838
	13 14	WARM TEST	296.75 79.15 296.75	78688259 -1.09511184	.00078377	4.21704216	.27822600
	15 16 17	WARM TEST COLD TEST WARM TEST	79.15	78668463 -1.09448176	.00090548	4.21755777	.41833222
	17 18 19	COLD TEST	79.15	78678302 -1.09415670	.00076975	4.22539651	.25479739
18	20	COLD TEST	79.15	78644600	.00077403	4.22392484	.12785607

CH. 14 ,6 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.24443587983

NOISE POWER STABILITY (K) = .36861312498

NOISE POWER STABILITY DELTA (K) = 1.21044312548

 $NPS_MAX(K) = 1.30127150167$ $NPS_MIN(K) = .0908283761833$

		• • • • • • • • • • • • • • • • • • • •		•			•
	AMS	U-A1-1, CH1	4, S/N F	01, NF & NPS	TEST DATÀ 3/10	0/98 (A1-2	HORN)
	SEQ	TEMP_TEST	TEST TEM	P VOLTAGE	STD_DEV	NF (dB)	NPS(K)
7	4 1	WARM TEST	296.75	-1.09281102	.00108703		
ید		COLD TEST	79.15	78717213	.00074613	4.24813067	.11179912
_	. 3	WARM TEST	296.75	-1.09203843	.00099430		
	4	COLD TEST	79.15	78577157	.00083641	4.23604027	.33017720
	5	WARM TEST	296.75	-1.09164026	.00108657		
	6	COLD TEST	79.15	78412807	.00074156	4.21666420	.10750682
	7	WARM TEST	296.75	-1.09123978	.00115185		
	8	COLD TEST	79.15	78456980	.00073860	4.22707215	.24978406
	9	WARM TEST		-1.09060943	.00114915		
	10	COLD TEST	79.15	78448212	.00076343	4.23230022	.24530043
	11	WARM TEST	0.00	0.00000000	0.00000000		
	12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	13	WARM TEST	0.00	0.00000000	0.00000000		
	14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	15	WARM TEST	0.00	0.00000000	0.00000000		
	. –			0.00000000	0.00000000	0.00000000	0.00000000
	16	COLD TEST	0.00	WUWWWWWW.W	שששששששש.ש	0.00000000	0.00000000

0.00000000 0.00000000

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CH. 14 ,6 MHz MHz

17 WARM TEST 0.00

19 WARM TEST 0.00

18 COLD TEST

20 COLD TEST

NOISE FIGURE AVERAGE (dB) = 4.23205384725

0.00

0.00

NOISE POWER STABILITY (K) = .208913524204

NOISE POWER STABILITY DELTA (K) = .222670376661

 $NPS_MAX(K) = .330177196446$ $NPS_MIN(K) = .107506819785$

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C1'61	<i>\$1.</i> 962	<i>L6L</i> '0	L91'0	087.0	\$282\$06.27T	4.236	057'0	82299768E.1	9LS.0	128.0	\$882092.607	C12218000.0	56791/8/:0-	812721100.0	7176E60.1-		VAEBVCE	
31 02	32 900	LULU	2310	002.0	7C837UU 3EE	7007	0300	800332000 1	7230	1000	3000070 002	210010000	0007.2020	*******				
CUGI	SL'96Z	008.0	<i>L</i> 91'0	Z87.0	Z80Z8Z0.8 <i>TT</i>	842.4	711.0	1.388274532	165.0	<i>\$11.</i> 0	4582126,117	05134/000.0	£1271787.0-	0.00780100.0	0118260.1-	100		
	27.962	267.0	991.0		873E147.ETT	4.224		1.391267423	742.0	757.0	9627721,707	0.00477000.0	00944887,0-	0.001084700	7921460.1-	001		
	SL'967	267.0	991.0		774.0013202	4.225		1.391084622	442.0	618.0	5912281,707	027697000.0	20587387.0-	002721100.0	8184460.1-	001		
	27.96C	467.0	991.0		6747713.277	4.218		1.392059533	6£9.0		705.5149252	084206000.0	£9483987.0-	061052100.0	8111560.1-	100		
	27.36C	\$6L'0	991.0		772.5268063	712.4		1.392123786	£22.0	228.0	705.2218633	077587000.0	6\$288387.0-	015691100.0	08£4260.1-	100		
	25.36C	\$6L'0	991.0		1297139.27T	4.220		77661819E.1	852.0	277.0	99253997	081257000.0	\$\$02\$787.0 -	016660100.0	6446260.I-	100		
	25.962	96L'0	991.0		0711487.477	4.230		181252095.1	862.0	978.0	7052236.707	048848000.0	02787787.0-	0.001238610	£97£260.1-	100		
	ST.362	£08.0	891.0		341£104.187	792.A		998186886.1	£92.0		8624112,217					001		
1	27.962	867.0	751.0		EISEATA. OTT	4.239		1.389354064	195.0	£18.0	\$£16365.017					100		
S1.97		\$08.0	891.0		782,5088290	£72.4		1.385194900	789.0	198.0	9712602.717					001		
Cload		testNEdT			Tsys			YFact	CNEQL	HMEGT	ScalFac	StdDevVc	МеалУс	StdDevVh	МеапУћ	Samples	Description	Data
1	,		5.5. 1			1	~ ***	1	1									
}	†	NEQL	Ð/ĐP	(K)	(K)	ЯР	ЯÞ		NEQL	NEQL	K/Volt	Std Dev	Mean	2td Dev	Mean	Samples		
		test	theory	291Tb	EysT	Noise Fig		Y Fact	Cold	10H	Scale Fac	V Cold	V Cold	JoH V	JoH V	Number Of	Description	Data
1	1	expected		<u> </u>	6.1327E-06	CHconst			· · · ·	1								
1		Overall	\$91.0	əmiTinl		Tcold	 									86/01/8		
1	 	11-0.00	6,00E+06	Wbasa		Thot	l		 			(ZH2) 1700	167.72 Y.JV	EKEGUE	THE & PC			
1	-	ļ	70.1100	11.17 - 4	 		}		H	L DIG 22	- TT/) TOTAL							
L	L	l	1	<u>l</u>	790	οT	<u> </u>	l	<u> </u>	НОВИ	HELF (A1-2	CRIVER SI	ag THOL	S/N EU1 E	I CHIV	1 A-112MA	L	

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10 COLD TEST

11 WARM TEST

AM	150-A1-	., cH1	5, 3/w: FO	ol, NF di	NPS TEST	DATA 3/31/92
				STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.25	00172976	.00000027		
2	COLD TEST	79.15	00144221	.00000020	6.51459020	.17955338
3	WARM TEST	296.25	00172705	.00000018		
4	COLD TEST	79.15	00144088	.00000022	6.52869114	.09425883
5	WARM TEST	296.25	00172617	.00000017		
6	COLD TEST	79.15	00143992	.00000020	6.52523770	.08325838
7	WARM TEST	0.00	0.00000000	0.00000000		
8	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM TEST	0.00	0.00000000	0.00000000		

0.00000000

0.00000000

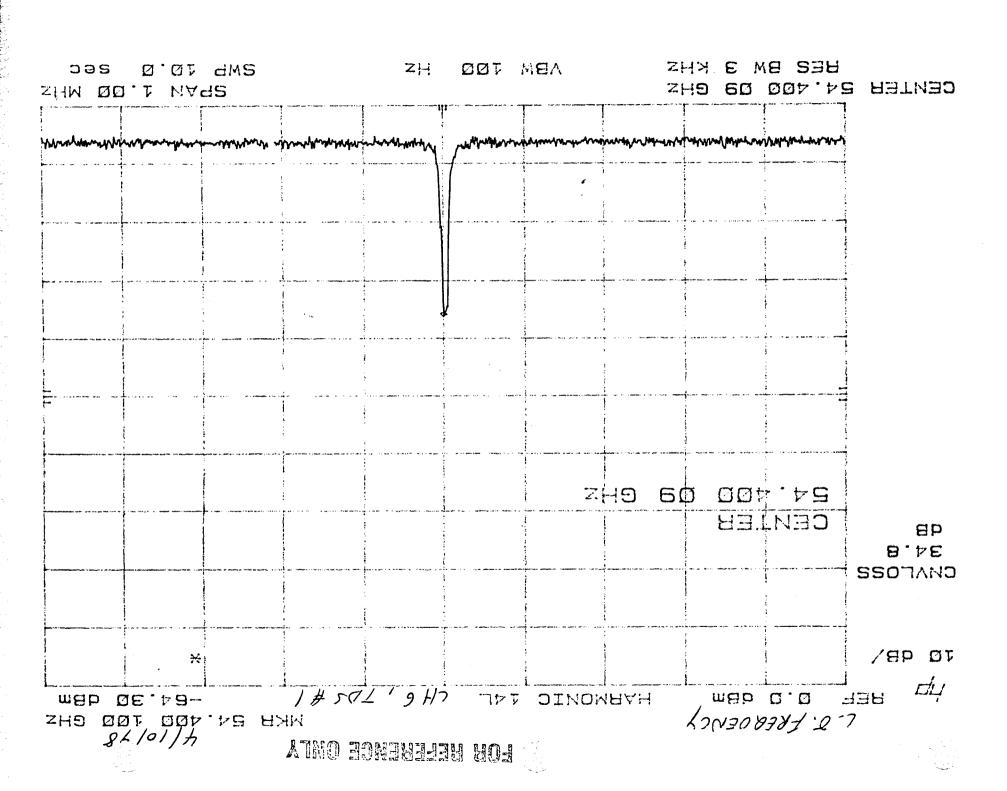
. / 3

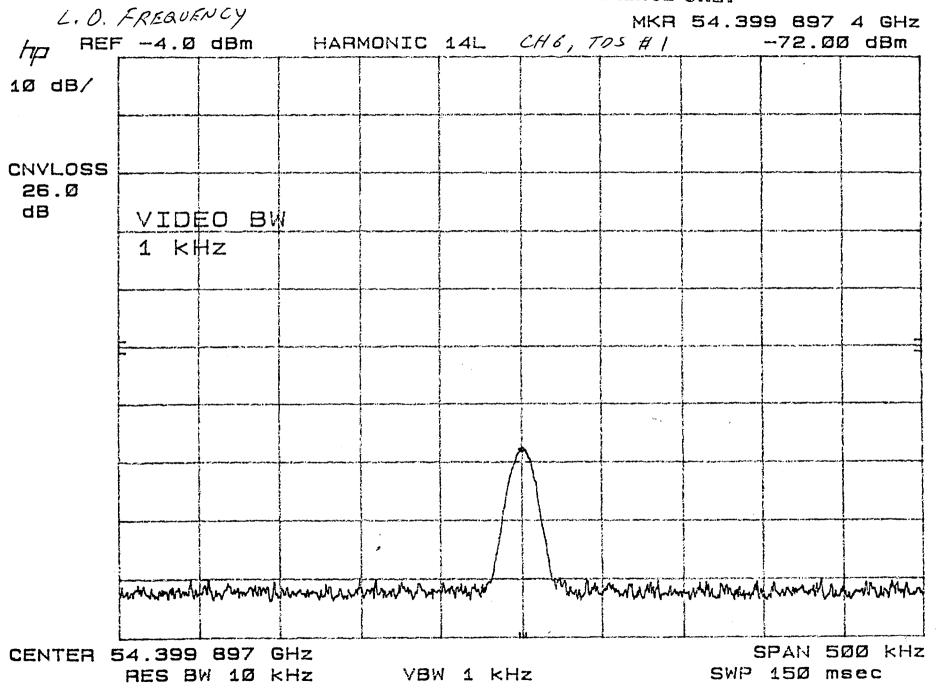
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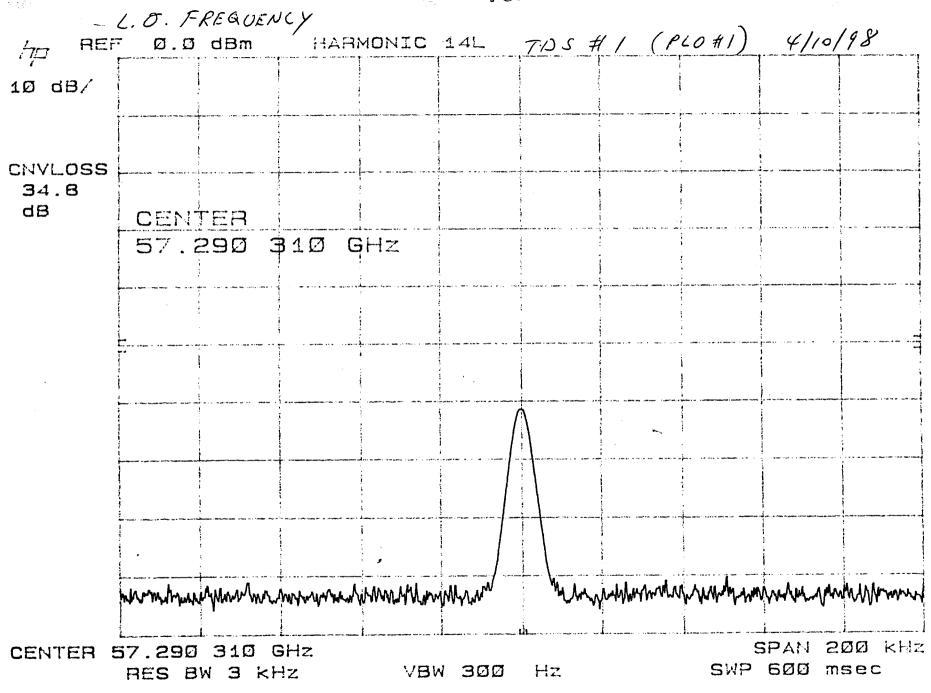
0.00000000

TEST DATA SHEET 1 LO Frequency Test Data (Paragraph 3.5.1) (A1-1)

Test Setup	Verifi	ed: <u>7</u> ,	7 Signatur	1	Baseplat	e Temperatu	re (T _B) <u> </u>	<u>30, 3</u> •c			
Compo-		Channel	V _b (V)	I _b (mA)		P _{dc} (mW)		f _o (GHz)			
nent		No.			Required (Max)	Measured	Pass/ Fail	Required	Measured	Pass/ Fail	
		6	9.97	180	2,700	1794.6	P	54.400 ± 0.003	54,400		
		7	9.94	194	2,700	1928.4	P	54.940 ± 0.003	54,940	P	
		9	Posi-		9,000			[V
	10	tive	616	(13,500)*	7776.5	P				, 1	
	LO	11	15.1	515			,	57.290344	57,290310	P	
	No.	12	Nega-		1,500			± 0.000 150. CE 6			,
LO	1	13	tive	64		966.4	P	1			1
		14	15,1	6 T			•	\$ 7.290310		71	1
	.	9	Posi-	·	9,000			,			
		10	tive		(13,500)*)
	LO	- 11				·		57.290344	·		
5	No.	12	Nega-		1,500			± 0.000150			\
-J -	2	13	tive						X		
		14									\
		15	14.89	33	3500			88.980 ± 0.080			(
Mixer/ Amps		Ali	9,94	24 2	2,550	2,415					
IF Amps		All	7.95	264	5,500	2099					
				Primary	24,510						
				(LO#1)	(29,010)*						
T	OTAL			indancy.	24,510						
• • • •				(LO#2)		<u>_</u>					
) specifie	d in AE-2666	60.		Pa	ss = P, Fa	ail = F	
PLO 1 Lock Detect PLO 2 Lock Detect											
Part No.: 1356429-1 Test Engineer: The Little											
Serial No.:						Quality Assur					
				· · · · · · · · · · · · · · · · · · ·				100			
e Para					I	Date: 4	4/10	198			







25.7° 25.9° 21.8° 26.5° 27.0° 27.2°

TEST DATA SHEET 4 IF Output Power Test Data (Paragraph 3.5.2) (A1-1)

Test Setup Verified:_	2.7mg	Baseplate Temperature (T _B) <u>25.7</u> °C
	Signature	

			·						
Compo-	Channel		V _b (V)	I _b (mA)	P _o (dBm)	Atten (dB)	P.	(dBm)	
nent		No.		:			Required	Measured	Pass/ Fail
		6	9.97	180	-20.11	7	-27.0 ± 1.0	1-27.24	م
		7	9.94	194	-19.02	8	-27.0 ± 1.0	-26.94	P
		9	Posi-		-20.34 B	7	-27.0 ± 1.0	-27,40	P
		10	tive		20 88720	6	-27.0 ± 1.0	-26,88	٩
	LO	11	15.1	515	-21,20	6	-27.0 ± 1.0	-27.04	ρ
	No.	12	Nega-		-20.68	6	-27.0 ± 1.0	-26.54	م
LO	1	13	tive	64	-20.26	7	-27.0 ± 1.0	-27.31	P
		14	15.1	,	-20,72	4	-27.0 ± 1.0	-26.55	P
		9	Posi-				-27.0 ± 1.0		
		10	tive	,			-27.0 ± 1.0		
	LO	11					-27.0 ± 1.0		
	No.	12	Nega-				-27.0 ± 1.0		
	2	13	tive				-27.0 ± 1.0		
		14					-27.0 ± 1.0		
		15					-27.0 ± 1.0		
Mixer/ Amps		All	9,94	242					
IF Amps		All	7.95	264					1

Pass = P, Fail = F

Part No.: /356429 - /	Test Engineer:
Serial No.:	Quality Assurance:
	Date: 4/10/98

AE-26002/6A 15 Sep 97

SHEET 46 OF GUERNO. 1764

TEST DATA SHEET 7 (Sheet 1 of 2) Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-1)

Test Setup Verified:). Zuung Signature	Baseplate Temperature (T_B) 30.3 \circ C	
* **		•	

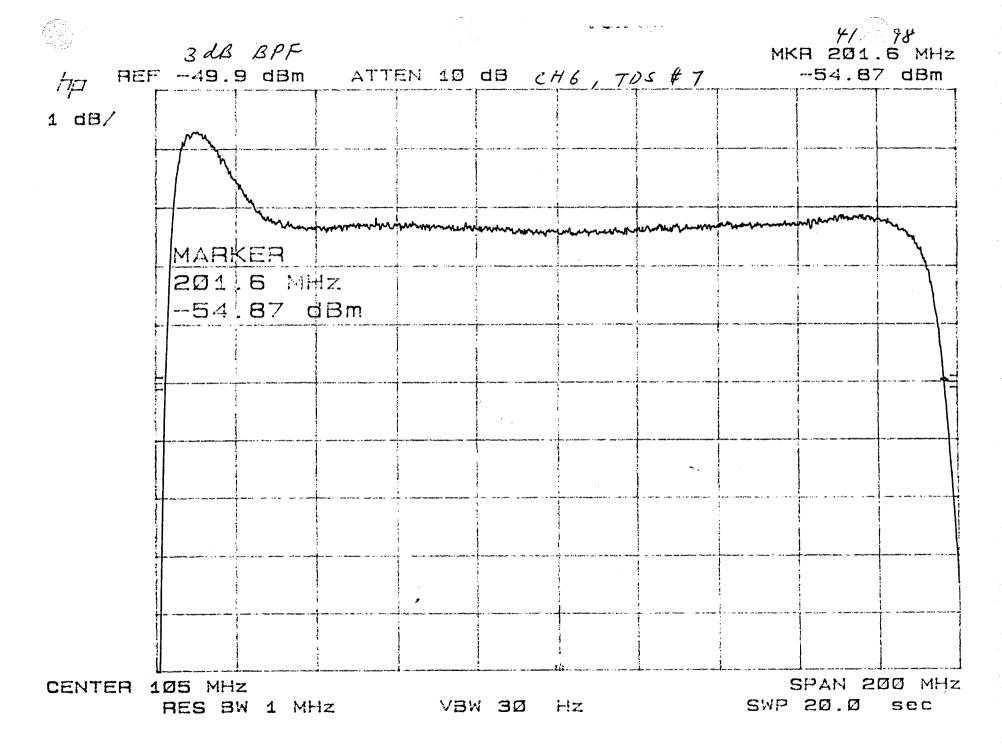
	Compo	nent	Channel No.	V _b (V)	I _b (mA)		Frequency IHz)	3 dB BW F (Mi	requency Hz)	Pass/Fail
		,trž		·		Lower	Higher	Required MAX	Measured	•
	/ LO	·	6	9.97	180	7,4	201.6	490200	194.2	P
	1	• •	7	9.94	194		200,0	400200	194,2	P
A	. V	LO	9	Positive	\times			25/65		
']		No.	10					78		
		1	11		\times			36 36		
	•		12	Negative	\times			16/6		
			13					- 8 8 8		
ı			14		$\nearrow \overline{}$			- 3.g ³		
١		LO	9	Positive				33 765		
-		No.	10			•		78		
1		2	11					36 36		
İ			12	Negative				$16\frac{16}{16}$		
١			13					8- 8 -		
١			14					3 3		
			15					.6000/200		
	Mixor/A	mps	Ali							
	IF Am	ps	Αli							

Part No.: 1356429-1	Test Engineer: The Management
Serial No.:FO/	Quality Assurance:
	Date: $4/10/98$

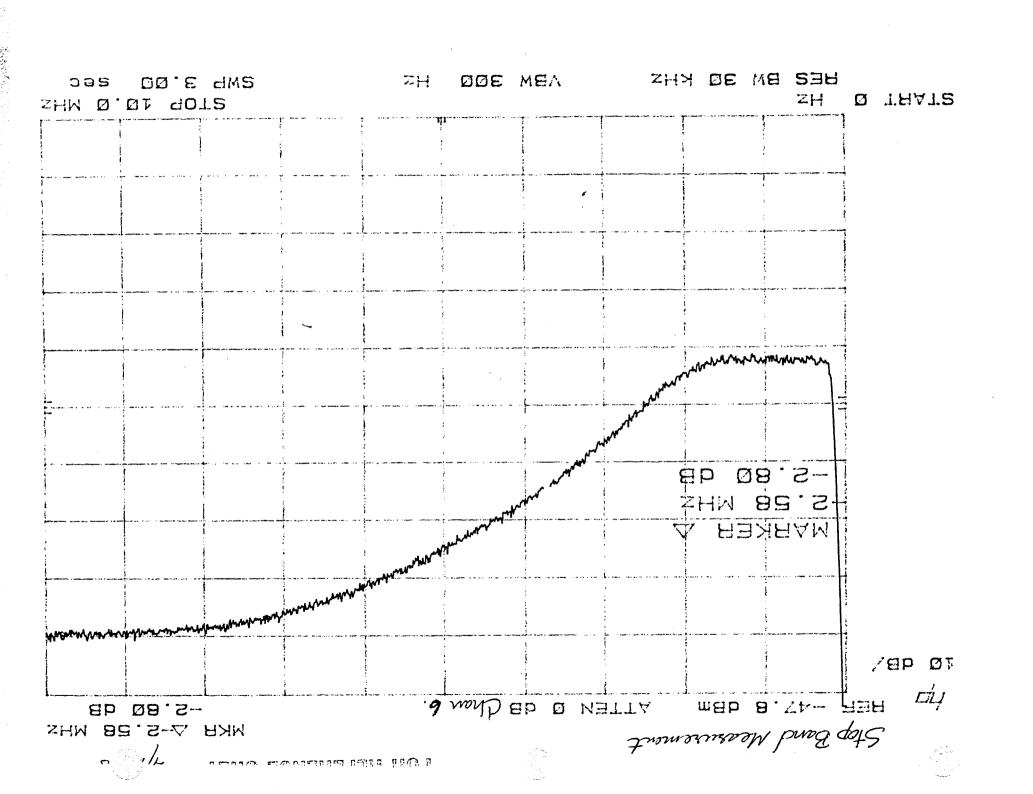
SHEET U) OF ECR NO. 1 64

TEST DATA SHEET 7 (Sheet 2 of 2)

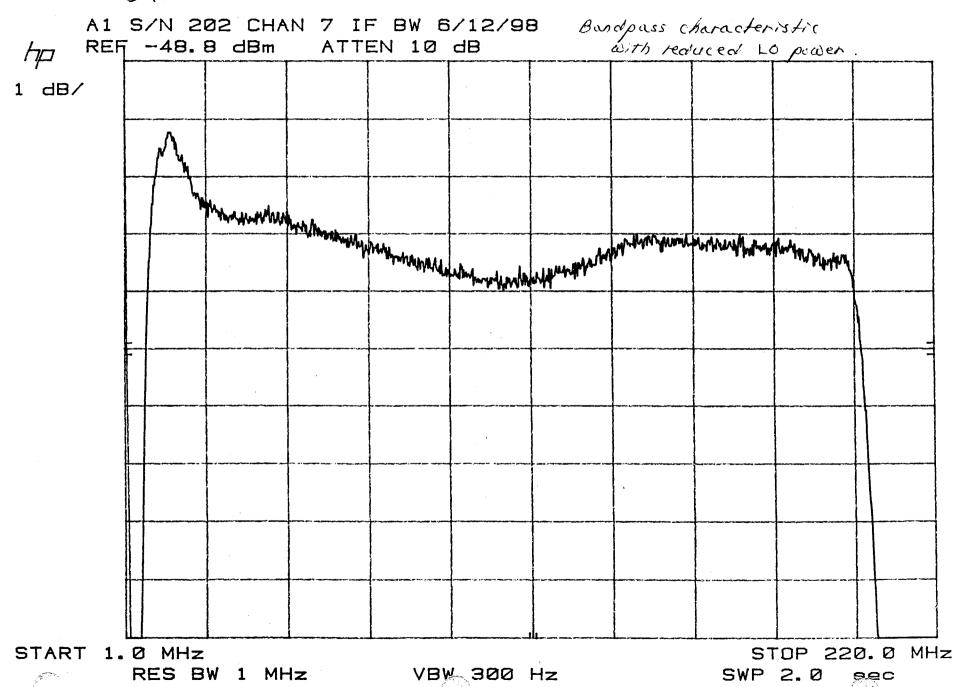
_			Bai	idpass Chara		***************************************	Paragraph 3.	' '		
	Test Setup V	Verified:_		nature	Bas	eplate Temp	perature (TB)	<i>30,3</i> ℃		
	Compo	nent	Channel No.	V _b (V)	I _b (mA)		Frequency Hz)	40 dB BW (MI		Pass/Fail
						Lower	Higher	Required MAX (Ref Only)	Measured	
	LO		. 6	9,97	180	2,3	224.8		222.5	P
			7	9.94	194	2.0	222.8	520 \$	220.8	P
		LO	9	Positive	, , , ,			429		
		No.	10	' '				Storf		
		1	11 .					37		
			12	Negative				-24-		
			13					408		
			14					FA.		
	·	LO `	. 9	Positive				429		
		No.	10			,		A014		
	·	2	11					47-7		
			12	Negative				P21- X		
			13 '	. i N				1-10-7		
	,		14					1-4-		
			15					7800-	<u>`</u>	
	Mixer/Ar	mps	Ali							
	IF Am	ps	All							
		•						/ 		
					Do Lea	not cho ve it b	arge the	is colus Tsinh u/8	mn 198	·
	Part No.:		6429- 01	-/		2.5	ngineer:	Ther		
•	20141 IAO::		<u> </u>				Assurance:_	0/98		- Arterior and a resident and a resi
						Date:	. / /	-//		

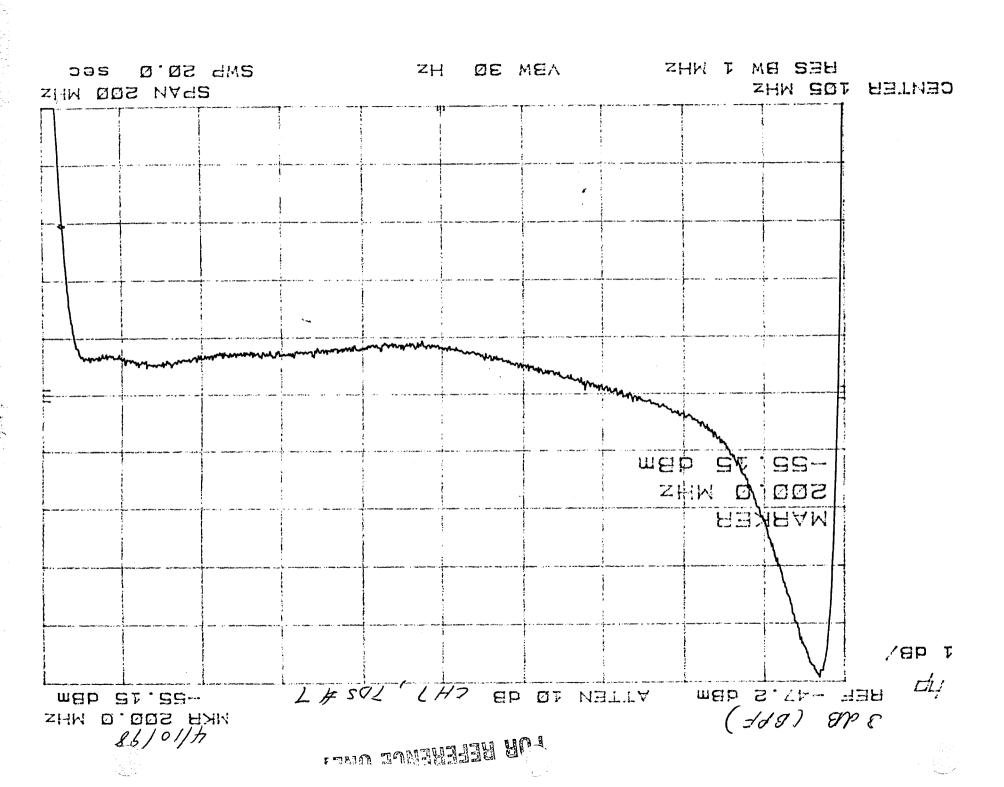


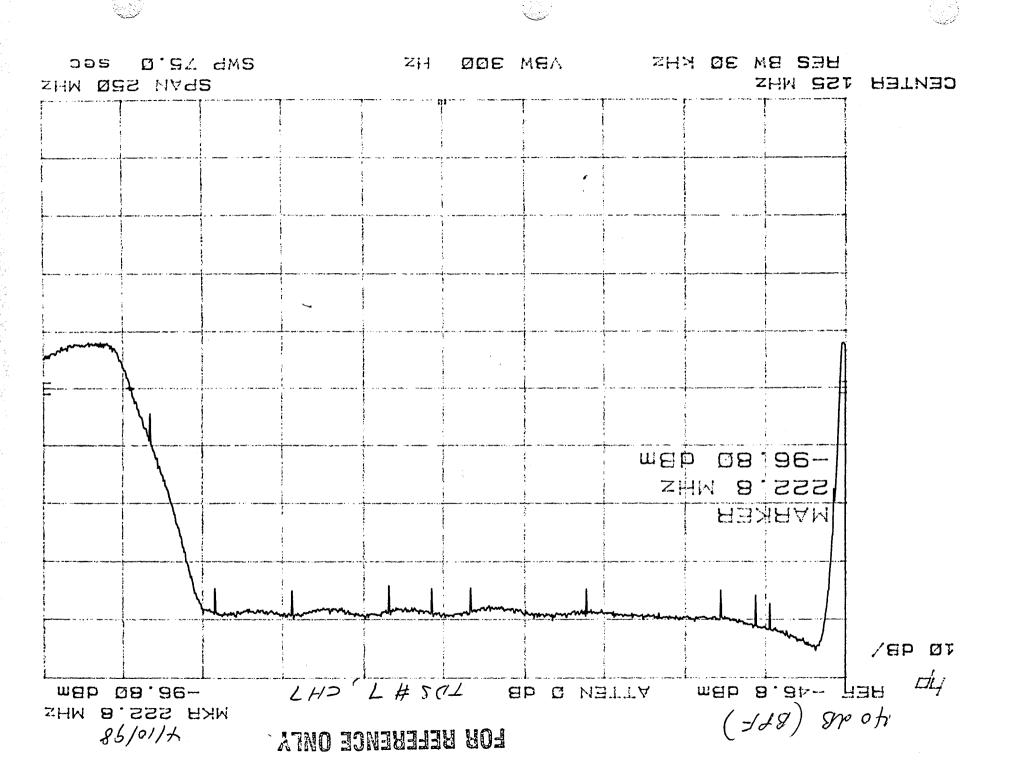
40 de Characteristic (BPF) MKH 224.8 MHz REF -47.8 dBm ATTEN Ø dB Ch6, TDS#7 -97.70 dBm hp 10 dB/ MARKER 224.8 MHZ -97.7Ø dBm SPAN 250 MHz CENTER 125 MHz SWP 75.Ø sec RES BW 30 kHz VBW 300 Hz

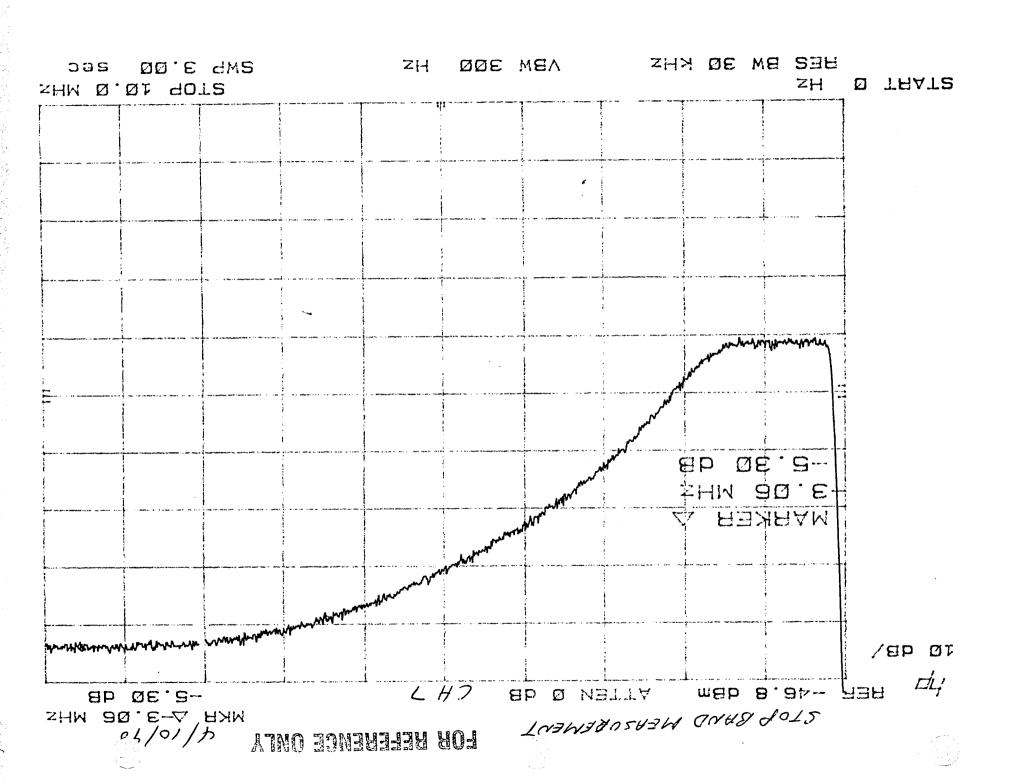


SUPPORT DATA FOR TDS 52









TEST DATA SHEET 10 (Sheet 1 of 16)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation	
				23,7			-194.0	-,6829		
					- 9620	,00023	-194.0	-, 6813	.00017	
	E. Cully Style R. Kap			23.7	-,9609	.00021	-194,0	-,6809	,00020	/
		9,97	180							
LO	\$	bros of								
	cilile	MYC.								
	Pap	191							·	
	(x.101)									
Mixer/ Amps	All	9.94	242							(Christment)
IF Amps	All	7,95	264		7					TO SACRET
* SEE ,	PRINT .	OUT 7	EST	DATA	SHEET	-(NF	& NPS),		
art No.:	13564	29-	/		· Test E	ngineer:	2 Zu	<u> </u>		
Serial No.:	FO	/			Quality	y Assurance	:			
Serial No.:	FU	<u>/</u>					10/98			



TEST DATA SHEET 10 (Sheet 3 of 19) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Sett	ıp Verifie :_	7. 7. 6 Signa	ature	Baseplat	e Temperatu	re (T _B) <u> </u>	<u>2,3</u> ℃		
		NF ((dB)				NPS (***************************************	
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
6	4.25	4.05			¥0.08				
		4.06							
		4.07							
:									
					·				
		()							
	5.25		4.06	P.E	.08)	業變			
	A) ot REQU,		>	D		- 4	Pass = P,	Fail = F
(\$) NPS	الم كذا	OT REQUI	RED FO	R.THI_	S' RECF	IVER SP	HECF (A1-1)	
						<u>`</u>	1 1 1		
		429-1			Test Engine	er: 7/	oll	J	
Serial No	:: FO	7/			Quality Ass				
					Date:	4/10/	98		
			•			***			

A-15 Rappor

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH6, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_	•	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
2	WARM COLD	TEST	296.85 79.15	96519120 68293507	.00046306 .00021134	4.05415710	.33205442
3	WARM	TEST	296.85	96198591	.00023166		~~~~~~
4	COLD	TEST	79.15	68127672	.00016698	4.06366555	.12209902
5	WARM	TEST	296.85	96094337	.00021227		
6	COLD	TEST	79.15	68089632	.00020343	4.06926410	.09906953
7	WARM	TEST	0.00	0.00000000	0.00000000		
8	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM	TEST	0.00	0.00000000	0.00000000		
10	COLD	TEST 🛰	0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM	TEST	0.00	0.00000000	0.00000000		
12	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM	TEST	0.00	0.00000000	0.00000000		
14	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00 00 0000
15	WARM	TEST	0.00	0.00000000	0.00000000		
16	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM	TEST	0.00	0.00000000	0.00000000		
18	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM	TEST	0.00	0.00000000	0.00000000		
20	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 6 ,194.2 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.06236672606

NOISE POWER STABILITY (K) = .184407656029

NOISE POWER STABILITY DELTA (K) = .232984893305

 $NPS_MAX(K) = .332054423003 NPS_MIN(K) = .099069529698$

TEST DATA SHEET 10 (Sheet 2 of 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Tes	st Setup V	erified: 2	7 Signa	ture	Base	eplate Temp	erature (T _B)	_3 <u>0.3</u> °(C		
	Compo- nent	Channel No.	V _b (V)	l _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation	
								ş	. ,		
			9.94	194	-						
	LO (Ucy Stills	mth.							•	
	· ·	(X.Kapt	/								
							,				
	Mixer/ Amps	All	9,94	242							
. 11	F Amps	· All	7.95	264							
		PRINTO			TA SH					The second secon	
		135642 F01	(7 - <u>/</u>				ineer:	Then			-
							4 / 10	198			_



TEST DATA SHEET 10 (Sheet 4 of 40)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Set	up Verified:	7) N Sign	ature	Basepla	ate Temperati	ure (T _B) _ ろ	<i>0, 3</i> ℃	,		
		NF	(dB)		NPS (K)					
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail	
7	4.25	5,19			X 0.08					
		5.12								
		5,13								
		3,73								
		$-\sqrt{}$								
						, d				
		./								
	5,20		5,15	P	.08		72367	al de la co		
C. C. C. C. C. C. C. C. C. C. C. C. C. C	<u> </u>		3,/3	. 101						
		ノ -						ass = P, I		
D NPS	15 20	OT REQU	IKED F	OK /H1	'S RECE	iver sh	HELIE (1	91-1)		
		6429 -			est Engineer	:7	lett			
erial No.:_	F	0/	 		Quality Assur					
				r	Date: 4	1/0/90	8			
					MAR SU '98					

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH7, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_TEST		P VOLTAGE -1.02948297	STD_DEV .00039771	NF (dB)	NPS(K)
2	WARM TEST	296.85 79.15	79722153	.00058581	5.19008488	.33151222
3	WARM TEST	296.85	-1.03051066	.00045510		
4	COLD TEST	79.15	79435370	.00050459	5.12169233	.38450239
5	WARM TEST	296.85	-1.03126437	.00056483		
6	COLD TEST	79.15	79521768	.00051512	5.12693375	.49308406
7	WARM TEST	0.00	0.00000000	0.00000000		
8	COLD TEST	0.00	0.00000000	0.00000000	Ø.ØØØØØØØØ	0.00000000
9	WARM TEST	0.00	0.00000000	0.00000000		
10	COLD TEST	. 0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM TEST	0.00	0.00000000	Ø.00000000		
14	COLD TEST	0.00	0.00000000	0.00000000	Ø.Ø0ØØØØØØ	0.00000000
15	WARM TEST	0.00	0.00000000	0.00000000		
16	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000		
18	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM TEST	0.00	0.00000000	0.00000000		
20	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 7 ,194.2 MHz MHz

NOISE FIGURE AVERAGE (dB) = 5.14634837074

NOISE POWER STABILITY (K) = .403032892262

NOISE POWER STABILITY DELTA (K) = .16157183642

 $NPS_MAX (K) = .493084059144 NPS_MIN (K) = .331512222724$

TEST DATA SHEET 10 (Sheet 4 of 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Т	est Setup Ve	rified: 7	7 Signan	ıre	Baser	olate Tempe	erature (T _B)	<u>30,3</u> °C			
	Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation	
	LO	A Kap	while	515							**************************************
	Mixer/ Amps	All	9.94	242							Chimbon and Chimbon
	IF Amps	1		264							ACASINY
P	# SEE /	13564	29-		DATA 	· Test E Qualit	ngineer:		the		



TEST DATA SHEET 10 (Sheet.5-of 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Setu	p Verified:_	7. Zw Signa	J	Baseplat	e Temperatu	re (T _B) <u>3</u>	<u>0,3 </u> ℃			
		NF (dB)		NPS (K)					
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail	
9	(Max) -3.95	3,99			¥8:08					
	•	3,99				<i>*</i>				
		3.99								
· .										
		1								
	·	/								
	5.20		3,99	PY	.08					
	·		<u> </u>	1 /				Pass = P,	Fail = F	
D ALD G	*	T PEDO	PED FO	R THIS	RECEI	UEK SH	IBF (AI	·-/).		
er) /	, 13 70	, <u>χυψυ</u> ,	/ -	-	•	- •				
Part No.:	1356	429 -	/		Test Engin	eer:	Thek	ty.		
	o.:				Quality As	surance:		_		
					Date:	4/10/9	8			

FOR REPERENCE CHLY

AMSU-A TEST

AMSU-A1-1, S/N FØ1, CH9, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.85	90468054	.00018266		
2	COLD TEST	79.15	63643692	.00014013	3.99355441	.03336758
3	WARM TEST	296.85	90288809	.00024433		
4	COLD TEST	79.15	63481614	.00015085	3.98766641	.13625313
5	WARM TEST	296.85	90147281	.00020702		
6	COLD TEST	79.15	63422124	.00016061	3.99422579	.08599494
7	WARM TEST	0.00	0.00000000	0.00000000		
8	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
g	WARM TEST	0.00	0.00000000	0.00000000		
10	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM TEST	0.00	0.00000000	0.00000000		
14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM TEST	0.00	0.00000000	0.00000000		
16	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000		
18	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM TEST	0.00	0.00000000	0.00000000		
20	COLD TEST	0.00	0.000000000	0.00000000	0.00000000	0.00000000

CH. 9 ,156.6 MHz MHz

NOISE FIGURE AVERAGE (dB) = 3.99181653425

NOISE POWER STABILITY (K) = .0855385496072

NOISE POWER STABILITY DELTA (K) = .102885546323

 $NPS_MAX(K) = .13625312631$ $NPS_MIN(K) = .03333675799866$

							4 al	aldulini 319	16	AE-26000 15 Se	
		Maia	. Ti				Sheet Fof 10 Data (Paragr)			
Tes	st Setup Ve		72 Signat)			erature (T _B)				
	Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation	
	LO	10 Edding	15.1 Wards	<u> </u>							
	Mixer/ Amps	All	9.94	242							HELVENGO
	IF Amps	All		264	10,010,000,000						aricavo)
		PRINT O			DATA	SHEE	T (NF	EL NPS). '(1)	· •	
		135646	29-1			· Test E	ngineer:	The	M	-	-
Ser	ial No.:	FOI					y Assurance:				



TEST DATA SHEET 10 (Sheet 6 of 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Set	up Verified:_		ature	Basepla	te Temperatı	re (T _B) _ <u>3</u>	<u>0.3</u> •c				
		NF	(dB)		NPS (K)						
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail		
10	3.95	4.06			X 0.12						
		4.05									
		4.05									
	•										
		\ /4									
		. /									
		A				\					
	5.20		4.03	P(),12	美数					
æ . A c							Pa	ass = P,	Fail = F		
G NPS	15 NO	T REQU	IRED /	-OR TH	IS REC	EIVER.	SHELF (A1-1)	•		
		•					. /				
		429-1	<u> </u>		rest Enginee	r:	My	· · · · · · · · · · · · · · · · · · ·			
erial No.:_	F	01	······································		Quality Assu						
				Ι	Date: 4	110/98	<u> </u>				

A-18 MAP 30 pp Q Kappay

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH10, NF & NPS TEST DATA , PLO #1 4/10/98

SEQ	TEMP_TEST	TEST TEM	P VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.85	-1.00213999	.00066615		~ ~ ~ ~ ~ ~ ~ ~ ~
2	COLD TEST	79.15	70932747	.00026312	4.05787910	.44851528
3	WARM TEST	296.85	99775224	.00030324		
4	COLD TEST	79.15	70545125	.00023468	4.04630945	.08485841
5	WARM TEST	296.85	99626440	.00034084		
6	COLD TEST	79.15	70490515	.00025556	4.05391318	.14457499
7	WARM TEST	0.00	0.00000000	0.00000000		
8	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM TEST	. 0.00	0.00000000	0.00000000		
10	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM TEST	0.00	0.00000000	0.00000000		
14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM TEST	0.00	0.00000000	0.00000000		
16	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000		
18	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM TEST	0.00	0.00000000	0.00000000		
20	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 10 ,76.4 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.05270322917

NOISE POWER STABILITY (K) = .226016561076

NOISE POWER STABILITY DELTA (K) = .363757869456

 $NPS_MAX (K) = .448616282273 NPS_MIN (K) = .084858412817$

TEST DATA SHEET 10 (Sheet-4 of 10)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

nent				1	1	(V) Standard	T _C (°C)	Vc	Standard
					Mean	Deviation .		Mean	Deviation
							•		
	1/							-	
LO	11	15.1	515						
								•	
				F. 4530					
Mixer/ Amps	All		242	12 16 Y 3 Y 7 12 12 12 12 12 12 12 12 12 12 12 12 12					
F Amps	All	7,95	264						
SEE PI	RINT O	UT T	ES T	DATA	SHEE	T (NF	* NPS	<i>)</i> ,	
.T	13564	:29-	/		· Tact E-	gineer:	215	t	



TEST DATA SHEET 10 (Sheet 7 of 10)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

. Test Sett	p Verified:_	7. 7.1 Signa	ature	Baseplat	e Temperatu	re (T _B)	<u>0.3</u> °C		
		NF ((dB)				NPS (K)		
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
11	3.95	4.30			0.12				
		4.28							
		4.28							
		\.							
	X				*				
	5,20		4.29	P	12		and the second s		
(T) 110 (1 (11)	OT REA	UNED I	Enn Th	V (0C	/ reluee	رسر 24 تر می	Pass = P,	Fail = F
H NF 3	75 70	D/ KLW	017007		/- \\c		3//66	./~ (/+/ -	-//,
			,			-) D F	/	
		5429 -		···		eer:	Trek		
Serial No	.: <i>F0</i>	2/			Quality Ass		/ c. G		
					Date:	4/10/	98		

FOR REFERENCE UNLY

AMSU-A TEST

AMSU-A1-1, S/N FØ1, CH11, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ		-	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM		296.85	96030439	.00054056		75754500
2		TEST	79.15	69506250	.00023202	4.30436318	.37750980
3	WARM	TEST	296.85	95736057	.00033612		
4	COLD	TEST	79.15	69170998	.00024959	4.28416679	.14846571
5	WARM	TEST	296.85	95627548	.00027749		~
6	COLD	TEST	79.15	69071242	.00021317	4.28064198	.04471308
7	WARM	TEST	0.00	0.00000000	0.00000000		
8	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM	TEST	0.00	0.00000000	0.00000000		
10	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM	TEST	0.00	0.00000000	0.00000000		
12	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM	TEST	0.00	0.00000000	0.00000000		
14	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM	TEST	0.00	0.00000000	0.00000000		
16	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	Ø.ØØØØØØØØ
17	WARM	TEST	0.00	0.00000000	0.00000000		
18	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM	TEST	0.00	0.00000000	0.00000000		
20		TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 11 ,69.3 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.28973656129

NOISE POWER STABILITY (K) = .19022953099

NOISE POWER STABILITY DELTA (K) = .332796726093

 $NPS_MAX (K) = .377509803345 NPS_MIN (K) = .0447130772522$

12 2cb 31 YE-30003\0¥

7

TEST DATA SHEET 10 (Sheet For 18)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (Al-1)

		-/:	SdN B 3		2//5 6	1140	151/	100	LNIXJ	<i>∃⊋5 †</i> ∤	_
CERWIT SAMPLES OF PROPERTY OF			SUN B O	(N) Z3			498	564	IIA IIA	NaxiM sqmA sqmA ¬I	
							5.15	J'5!	· 27.	07	
	(V) Standard noistived	V _C	(၁°) _၁ T	(V) Standard noitsiva	нV пвэМ	1 _H (°C)	(Am) _d l	(V) _d V	Channel No.	Compo-	

€1-A 91

Date:

TEST DATA SHEET 10 (Sheet & of 40)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Set	up Verified:	7. 7.1 Sign	ature	Basepla	te Temperati	ure (T _B) <u>- ತ</u> ೆಂ	<u>7,3</u> °C		
		NF ((dB)	······································			NPS (K)		
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
12	3.95	4.27			-0.18 A	K			
1		4,29							
		4,33							
		\bigvee							
. :		$/ \setminus$				·			
	·								
	5.20		4.30	P)./8				(A)
	*				*	7	Р	ass = P,	Fail = F
* NPS	15 N	OT REA	OURED	FOR 7	THIS RE	ECEIVER	SHELF	(AI-1)) .
						5			
		:429 -	/		Test Enginee	r:_ <i>7L</i>	MS_	-1.71	
Serial No.:_	Fo				Quality Assur		·		
				I	Date: 4	1/10/9	8		

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH12, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_TES	T TEST TE	MP VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TES	T 296.85	-1.08484892	.00066660		
2	COLD TES	T 79.15	78261112	.00037922	4.26657007	.33106705
3	WARM TES	T 296.85	-1.08201259	.00045324		
4	COLD TES	T 79.15	78209622	.00039447	4.28888189	.09543434
5	WARM TES	T 296.85	-1.08186547	.00047615		
6	COLD TES	T 79.15	78479355	.00038609	4.33003424	.05230684
7	WARM TES	T 0.00	0.00000000	0.00000000		
8	COLD TES	T 0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM TES	T _ 0.00	0.00000000	0.00000000		
10	COLD TES	т 0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM TES	T 0.00	0.00000000	0.00000000		
12	COLD TES	T 0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM TES	T 0.00	0.00000000	0.00000000		
14	COLD TES	T 0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM TES	T 0.00	0.00000000	0.00000000		
16	COLD TES	T 0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TES	T 0.00	0.00000000	0.00000000		
18	COLD TES	T 0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM TES		0.00000000	0.00000000		
20	COLD TES	T 0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 12 ,30.6 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.29524167611

NOISE POWER STABILITY (K) = .159602740607

NOISE POWER STABILITY DELTA (K) = .278760208771

 $NPS_MAX (K) = .331067045916 NPS_MIN (K) = .0523068371446$

TEST DATA SHEET 10 (Sheet 1-of 18) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Setup V	erified:	Signati	ure	Basep	late Tempe	rature (T _B)	<u>30.3</u> °c			
Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation	
LO	¥13 €.	15.1	515					47-34 FET (9 GA) C1-35		
Mixer/ Amps	All	9.94	242							
IF Amps		7,95								
* SEE Part No.: Serial No.:	135642			DATI	· Test Er Quality	ngineer:	Thek	os).		

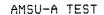


TEST DATA SHEET 10 (Sheet-9 of 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Setup Verified: 7. 7 Baseplate Temperature (T _B) 30.3 °C Signature									
·	NF (dB)			NPS (K)					
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
×15	7.70	4.37			70.18				
10		4.36							
		4.34							
		1							
·						·			
•									
	·								
	5.2		4.35	PLLE),24		NAME OF TAXABLE PARTY O	SERVICE SERVIC	
			1	1		1-25-3-2-JONES-JAN		Pass = P,	Fail = F
(#) NP	'S 15 N	OT REQU	UIRED,	FOR TH	HIS REC	CEIVER	SHELF	(A1-1),
Part No.:	Part No.: 1356429-1 Test Engineer: Thutty								
Serial No	Serial No.: FO / Quality Assurance:								
					Date:	4/10/	198		
		· · · · · · · · · · · · · · · · · · ·			7/2				

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AMSU-A1-1, S/N F01, CH13, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.85	91764773	.00063447		
2	COLD TEST	79.15	66779169	.00039226	4.36709789	.24253276
3	WARM TEST	296.85	91580314	.00047484		
4	COLD TEST	79.15	66583840	.00035450	4.35637830	.27304120
5	WARM TEST	296.85	91518233	.00048498		
6	COLD TEST	79.15	66440753	.00045507	4.33923444	.25768515
7	WARM TEST	0.00	0.00000000	0.00000000		
8	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM TEST	0.00	0.00000000	0.00000000		
10	COLD TEST	- 0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM TEST	0.00	0.00000000	0.00000000		
14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM TEST	0.00	0.000000000	0.00000000		
16	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000		
18	COLD TEST	0.00	0.000000000	0.00000000	0.00000000	0.00000000
19	WARM TEST	0.00	0.00000000	0.00000000		
20	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 13 ,15.7 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.35425203408

NOISE POWER STABILITY (K) = .257753037118

NOISE POWER STABILITY DELTA (K) = .0305084369291

TEST DATA SHEET 10 (Sheet Y of 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)		(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation
					Mean			- moan	
	\.						•		
LO	料益、	ıs.l	515						
LO	- KK ,				-				
									\\
Mixer/ Amps	All	9,94	242						
IF Amps	Ali	7.95	264					100)	
SEE	PRINT	OUT	TEST	PA]	TA SH	5e7 (.	NFON	(F-) 1	
t No.:	13564	29-	<u>/</u>		· Test Ei	ngineer:	That	X.	
ial No.:	Fo	/			Quality	Assurance:	10/98		

17 18

TEST DATA SHEET 10 (Sheet 40 of 10)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Setup Verified: 2 Baseplate Temperature (T _B) 30.3°C									
	NF (dB)				NPS (K)				
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
13	3.95	4.35			*0.24				
X	\mathcal{M}	4.37							
		4.32			V				
		/							
		\bigwedge							
						,			
		./							
						227			
	5.2		4.35	P	.36				X
	//		•		X	/2/3/(12/3/3/()	P	ass = P, I	Fail = F
NPS IS NOT REQUIRED FOR THIS RECEIVER SHOP (A1-1).									
Part No.: 1356429-1 Test Engineer: The Description of the Part No.: 1356429-1									
Serial No.:_	FOI				Quality Assu			· · · · · · · · · · · · · · · · · · ·	
-				r	Date: 4	110/9	8		



FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH14, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_TEST	TEST TEM		STD_DEV	NF (dB)	NPS(K)
2	WARM TEST COLD TEST	296.85 79.15	-1.08221498 78623337	.00136291 .00084414	4.34755681	.59501616
3 4	WARM TEST	296.85 79.15	-1.07800028 78475781	.00105039 .00079801	4.37119160	.22321946
5 6	WARM TEST COLD TEST	296.85 79.15	-1.07641260 77993727	.00108267 .00080669	4.31670446	.09858354
7	WARM TEST	0.00	0.00000000	0.00000000		
8 9	COLD TEST	0.00	0.00000000 0.00000000	0.00000000 0.00000000	0.00000000 	0.00000000
10 11	COLD TEST	0.00 0.00	0.000000000 0.000000000	0.00000000 0.00000000	0.00000000	0.00000000
12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13 14	WARM TEST	0.00 0.00	0.00 000 000 0.00000000	0.00000000 0.00000000	0.00000000	0.00000000
15 16	WARM TEST	0.00 0.00	0.00000000 0.00000000	0.00000000 0.00000000	 Ø.ØØØØØØØØ	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000		
18 19	COLD TEST	0.00 0.00	0.00000000 0.00000000	0.00000000 0.00000000	0.00000000 	0.00000000
20	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 14 ,5.9 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.3452082378

NOISE POWER STABILITY (K) = .305606383341

NOISE POWER STABILITY DELTA (K) = .496432622252

 $NPS_MAX (K) = .595016157406 NPS_MIN (K) = .0985835351544$

TEST DATA SHEET 16 Temperature Sensor and Thermistor Test Data (Paragraph 3.6.1) (A1-1)

Test Setup Verified: 7. 1/2. Baseplate Temperature (T_B) 23.9 °C
Signature

	6	•	<u> </u>
Reference Designation	Specification	Measured Value	Pass/Fail
RT 40	2200 ± 100 Ω	2/74 Ω	5/20/18 2+74 Pass
· RT 45	2200 ± 100 Ω	2/73 Ω	Pass
RT 11	2200 ± 100 Ω	2172 Ω	Pass
RT 13	2200 ± 100 Ω	2174 Ω	Pass
RT 15	2200 ± 100 Ω	2175 Ω	Pass
RT 14	2200 ± 100 Ω	2175 Ω	Pass
RT20	2200 ± 100 Ω	2/73 Ω	Pass
RT 21	2200 ± 100 Ω	2/72 Ω	Pass
RT 23	2200 ± 100 Ω	2172 Ω	Pass
RT 24 -	2200 ± 100 Ω	2/72 Ω	Pass
RT 25	2200 ± 100 Ω	2/73 Ω	Pass
R1, 25	2200 ± 100 Ω	2174 Ω	Pads
RT 27	2200 ± 100 Ω	2175 Ω	Pass
RT 28	2200 ± 100 Ω	2175 Ω	Pass
RT 29	2200 ± 100 Ω	2/77 Ω	Pass
RT 30	2200 ± 100 Ω	2173 7.20 0	Pass
RT 31	2200 ± 100 Ω	2177 Ω	Pass
RT 34	2200 ± 100 Ω	2174 Ω	Pals
TB 56	3000 ± 100 Ω	2994 Ω	Pass
TB 57	3000 ± 100 Ω	2997 Ω	Pass
⊁ TB 53	4.1 – 4.6 V	2.1 m/ V	Fail

* Re Test of TAR 003182 oper No. 8040

* Measured Valued: 4.36 Volts / Pass

1. Vind. 05/21/98 (Pass)

Pass = P, Fail = F

14R 003/02

Part No.: 1356 429 - 1	Test Engineer:
Serial No.: FO/	Quality Assurance:
John Ho	5/20/9 8

A-SZ CON 30 78 R. Kapper

TEST DATA SHEET 20 Survival Heater and Thermal Switch Test Data (Paragraph 3.6.3) (A1-1)

Test Setup Verified:_	Y. Trinh	Baseplate Temperature (T _B) 22.9 °C
	Signature	

	Open S	Switch	Closed Switch			
Reference Designation	>10 MΩ	Pass/Fail	Specification	Measured Value	Pass/Fail	
HR1/TS1	>50,00	P		31.3.2	P	
	>5042	P	. 25 - 35 Ω	31.22	P	
HR2/TS2	750MQ	P		31.12	P	
	750MI	P		31,25	P	

Pass = P, Fail = F

Part No.: 1356429-1	Test Engineer:
Serial No.: FO/	Quality Assurance:
	Date: 5/20/98

A-4 63 CO Rappor

TEST DATA SHEET 23 (Sheet 1 of 3) Bias Voltage Verification Test Data (Paragraph 3.6.4) (A1-1)

Test Setup Verified:		Baseplate Temperature (T _B) 30.3 °C
•	Signature	

Reference Designation	Specification	Measured Value (V)	Pass/Fail
Mixer/IF AMP Ch 6, 7, 15, 9-14	+10 ±0.1	9,94	P
DRO Ch 7	+10 ±0.1	9.194	P
DRO Ch 15	+15±0.15	14.89 .	P
PLO +15	+15 ±0.15	15.10	P
PLO -15	-15 ±0.15	15.10	P
IF AMP Ch 9-14	+8 ±0.08	7,95	P

Part No.:/356429-/	Test Engineer:
Serial No.: FO /	Quality Assurance:
	Date: 4/10/98

MIR 30 78 5 000 A. Kappon

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Performing Organization Name and Aerojet 1100 W. H Azusa, CA Sponsoring Agency Name and Ad NASA Goddard S	ollyvale 91702		11. Contract or Grant No. NAS 5-32314 13. Type of Report and Period Covered Final 14. Sponsoring Agency Code				
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17. Key Words (Suggested by Author)	18. Distribution Statement Unclassified Unlimited						
Microwave Syst 19. Security Classif. (of this report)							
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